ORDER NO. KM40306116C2

Service Manual

Telephone Equipment

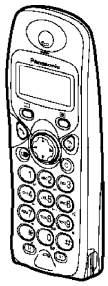
Caller ID Compatible

KX-TCD420GS / KX-A142EXS

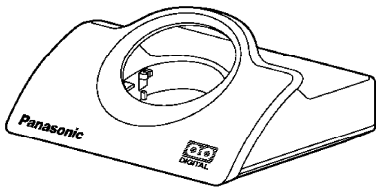
Digital Cordless Answering System

Silver Version

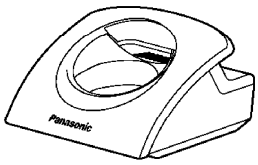
(for Germany)



KX-A142EXS
(HANDSET)



KX-TCD420GS
(BASE UNIT)



(CHARGER UNIT)

Configuration for each model

Model No	Base Unit	Handset	Charger
KX-TCD420	1	1	
KX-A142		1	1

KX-A142 is optional accessory.

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SPECIFICATION

Standard:	DECT= (Digital Enhanced Cordless Telecommunications)
Number of channels:	120 Duplex Channels
Frequency range:	1.88 GHz to 1.9 GHz
Duplex procedure:	TDMA (Time Division Multiple Access)
Channel spacing:	1728 kHz
Bit rate spacing:	1152 kbit/s
Modulation:	GFSK= (Gaussian Frequency Shift Keying)
RF Transmission Power:	approx. 250 mW
Voice coding:	ADPCM 32 kbit/s
Operation range:	Up to 300 m outdoors, Up to 50 m indoors
Analog telephone connection:	Telephone Line
Power source:	AC Adaptor (220 V - 240 V AC, 50 Hz)

Power consumption, Base Unit:	Standby: 3.5 W / Maximum: 9.2 W
Charger Unit:	Standby: 2.3 W / Maximum: 6.8 W
Battery life, Handset (if batteries are fully charged):	Stand-by: Up to 120 hours (Ni-MH) Talk: Up to 10 hours (Ni-MH)
Operating conditions:	5 - 40 °C, 20 - 80 % relative air humidity (dry)
Dimensions, Base Unit (D x W x L):	58 mm x 128 mm x 105 mm
Dimensions, Handset (D x W x L):	143 mm x 48 mm x 32 mm
Dimensions, Charger Unit (D x W x L):	84 mm x 86 mm x 60 mm
Weight, Base Unit:	about 170 g
Weight, Handset:	about 120 g
Weight, Charger Unit:	about 113 g
Connection jack:	RJ11 to TAE-F Plug

Specifications are subject to change.
The illustrations used in this manual may differ slightly from the original device.

IMPORTANT INFORMATION ABOUT LEAD FREE, (PbF), SOLDERING
If lead free solder was used in the manufacture of this product the printed circuit boards will be marked PbF.
Standard leaded, (Pb), solder can be used as usual on boards without the PbF mark.
When this mark does appear please read and follow the special instructions described in this manual on the use of PbF and how it might be permissible to use Pb solder during service and repair work.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

Panasonic

1. ABOUT LEAD FREE SOLDER (PbF: Pb free)

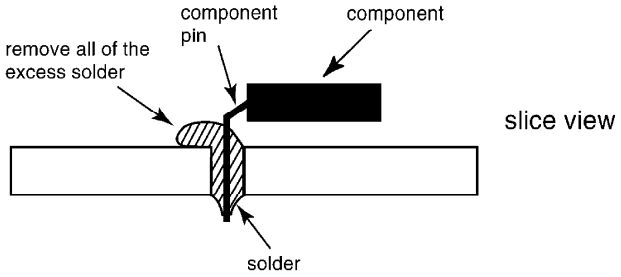
Note:
In the information below, Pb, the symbol for lead in the periodic table of elements, will refer to standard solder or solder that contains lead.
We will use PbF solder when discussing the lead free solder used in our manufacturing process which is made from Tin (Sn), Silver (Ag), and Copper (Cu).
This model, and others like it, manufactured using lead free solder will have PbF stamped on the PCB.
For service and repair work we suggest using the same type of solder although, with some precautions, standard Pb solder can also be used.

Caution

- PbF solder has a melting point that is 50°F ~70°F (30°C ~ 40°C) higher than Pb solder. Please use a soldering iron with temperature control and adjust it to 700°F ± 20°F (370°C ± 10°C). In case of using high

temperature soldering iron, please be careful not to heat too long.

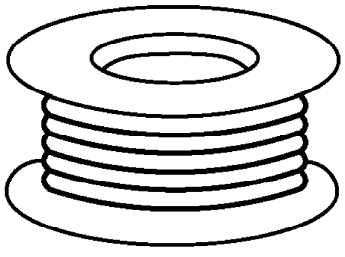
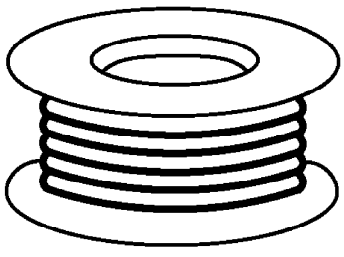
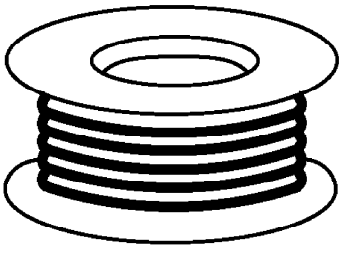
- **PbF solder will tend to splash if it is heated much higher than its melting point, approximately 1100°F (600°C).**
- **If you must use Pb solder on a PCB manufactured using PbF solder, remove as much of the original PbF solder as possible and be sure that any remaining is melted prior to applying the Pb solder.**
- **When applying PbF solder to double layered boards, please check the component side for excess which may flow onto the opposite side (See the figure below).**



1.1. Suggested PbF Solder

There are several types of PbF solder available commercially. While this product is manufactured using Tin, Silver, and Copper (Sn+Ag+Cu), you can also use Tin and Copper (Sn+Cu) or Tin, Zinc, and Bismuth (Sn+Zn+Bi). Please check the manufacturer's specific instructions for the melting points of their products and any precautions for using their product with other materials.

The following lead free (PbF) solder wire sizes are recommended for service of this product: 0.3mm, 0.6mm and 1.0mm.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

1.2. How to recognize that Pb Free solder is used

1.2.1. Base Unit PCB

(Component View)

(Flow Solder Side View)

Note:
The location of the “PbF“ mark is subject to change without notice.

1.2.2. Handset PCB

(Component View)

(Flow Solder Side View)

Note:
The location of the “PbF“ mark is subject to change without notice.

1.2.3. Charger Unit PCB

Note:
The location of the “PbF“ mark is subject to change without notice.

2. FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.

When repairing, the following precautions will help prevent recurring malfunctions.

1. Cover the plastic parts boxes with aluminum foil.

2. Ground the soldering irons.

3. Use a conductive mat on the worktable.

4. Do not touch IC or LSI pins with bare fingers.

3. CAUTION

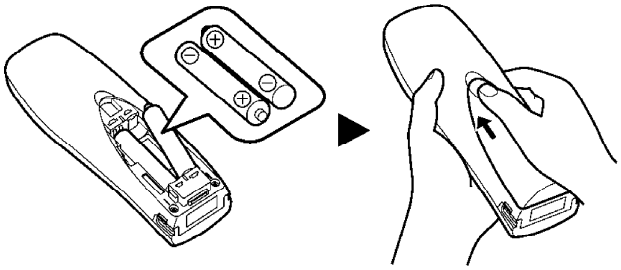
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommendenced by the manufacturer.
Dispose of used batteries according to the manufacture’s Instructions.

4. BATTERY

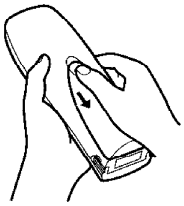
4.1. Battery Installation

Please ensure the batteries are inserted as shown. ⊖ part should be inserted first.
Close the cover as indicated by the arrow.

- When you replace the batteries, ⊕ part should be removed first.

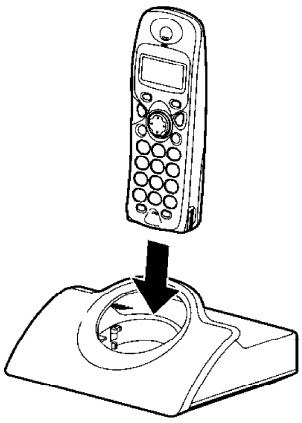


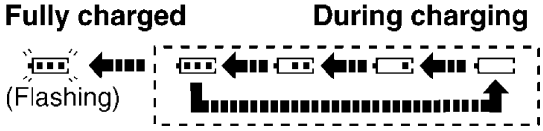
To replace the battery:
Press the notch on the cover firmly and slide it as indicated by the arrow.
Replace 2 batteries and close the cover then charge the handset for about 7 hours.



4.2. Battery Charge

At the time of shipment, the batteries are not charged. To charge, place the handset on the base unit. Please charge the batteries for about 7 hours before initial use. During charging, the battery icon is as shown below.





Display icon	Battery strength
	High
	Medium
	Low
	Needs to be charged

The handset which power is off will be turned on automatically when it is placed on the base unit. In normal use, the handset and the base unit should be powered on at all times.

Note for Service:
The battery strength may not be indicated correctly if the battery is disconnected and connected again, even after it is fully charged.
In that case, by recharging the battery as mentioned above, you will get a correct indication of the battery strength.

4.3. Battery Life

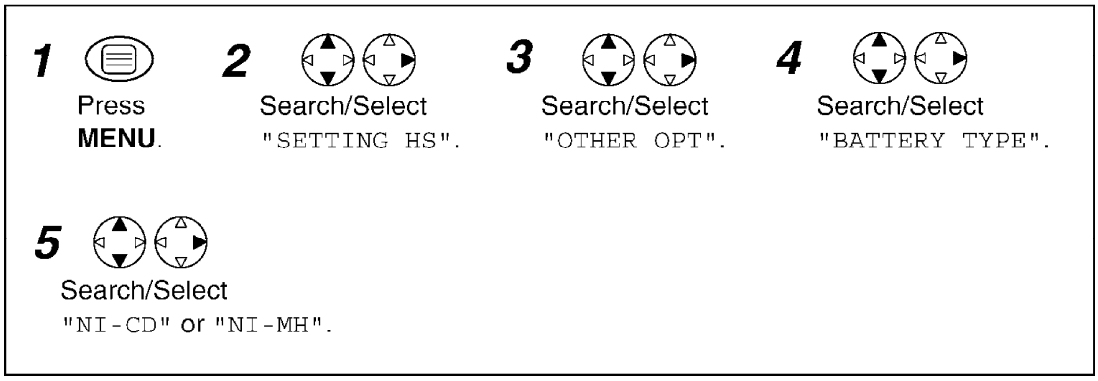
- Battery life is dependent on use and conditions but in general when using fully charged Ni-MH batteries (700 mAh):
Talk time: 10hrs approx.
Standby time: 120hrs approx.

- When using Ni-Cd batteries (250 mAh):
Talk time: 4hrs approx.
Standby time: 40hrs approx.
(Times indicated are for peak performance)
- The batteries reach peak performance after several full charge/ discharge cycles.
- The batteries cannot be overcharged unless they are repeatedly removed and replaced.
- If battery life is shortened then please check that battery and charge terminals are clean.
- For maximum battery life, it is recommended that the handset is not recharged until battery icon flashes **.**

4.4. Replacing the Batteries

If the **icon flashes after a few telephone calls even when the handset batteries have been fully charged, 2 batteries must be replaced.**
Charge new batteries for approximately 7 hours before initial use.
(The telephone line cord must not be connected to the telephone socket at this time).
When replacing the batteries, ensure that the correct battery type is selected.

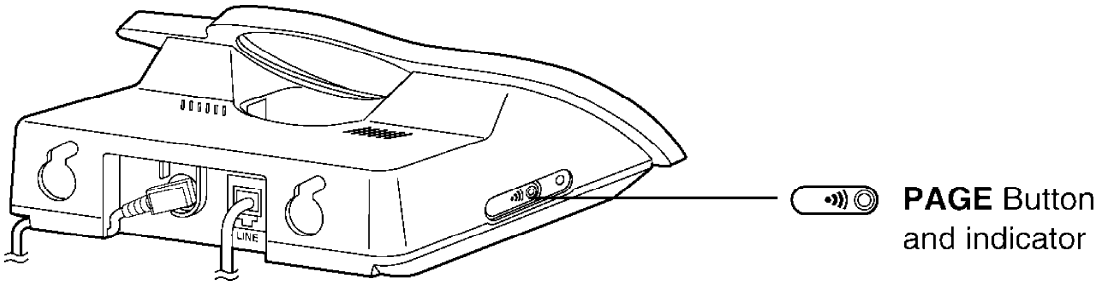
Selecting the Battery Type



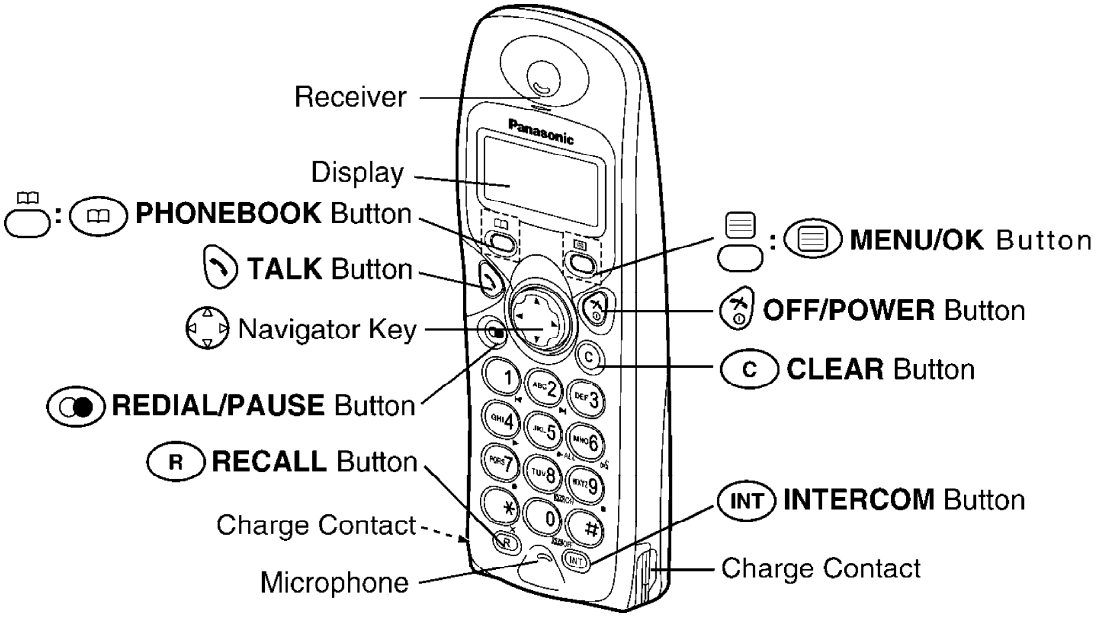
- To exit the operation, press **any time.**
- Do not use non-rechargeable batteries. If non-rechargeable batteries are fitted and start charging, it may cause the leakage of the battery electrolyte.
Please use only Panasonic P03P(Ni-MH) or P03H(Ni-Cd) batteries.

5. LOCATION OF CONTROLS

5.1. Base Unit



5.2. Handset

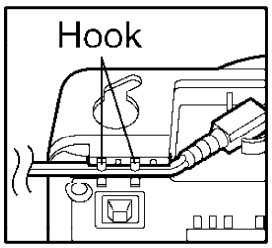


6. SETTINGS

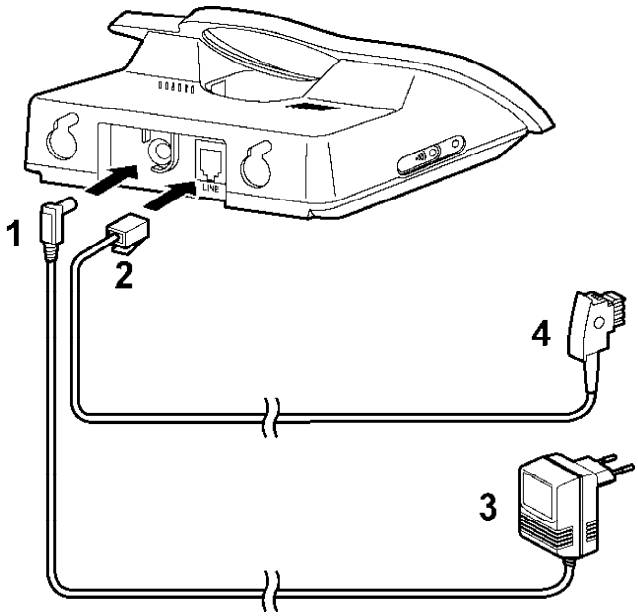
6.1. Connection

6.1.1. Base Unit

Plug in the AC adaptor and the telephone line cord in order 1, 2, 3, 4.



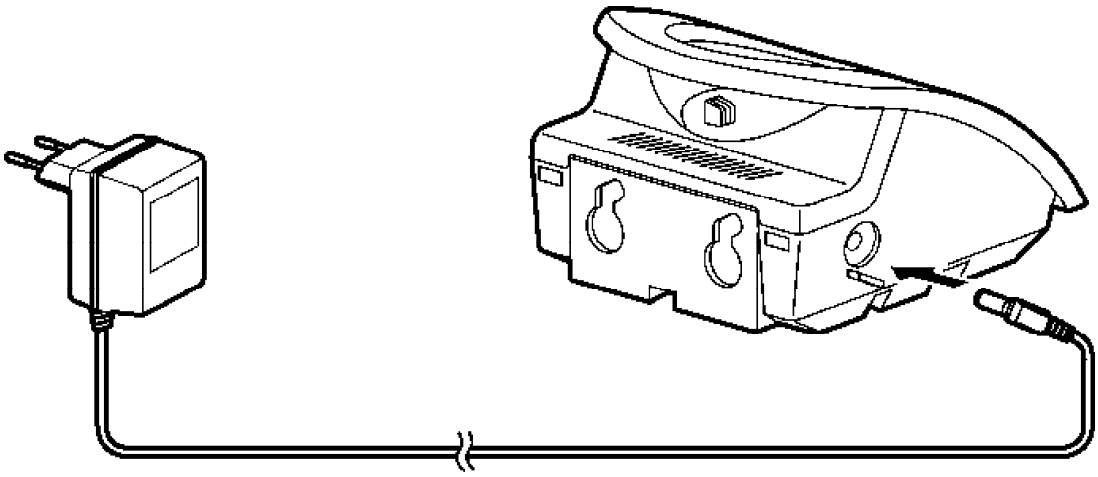
Fasten the AC adaptor cord to prevent it from being disconnected.



The AC adaptor must remain connected at all times (It is normal for the adaptor to feel warm during use).

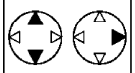
- Never install telephone wiring during a lightning storm.

6.1.2. Charger Unit



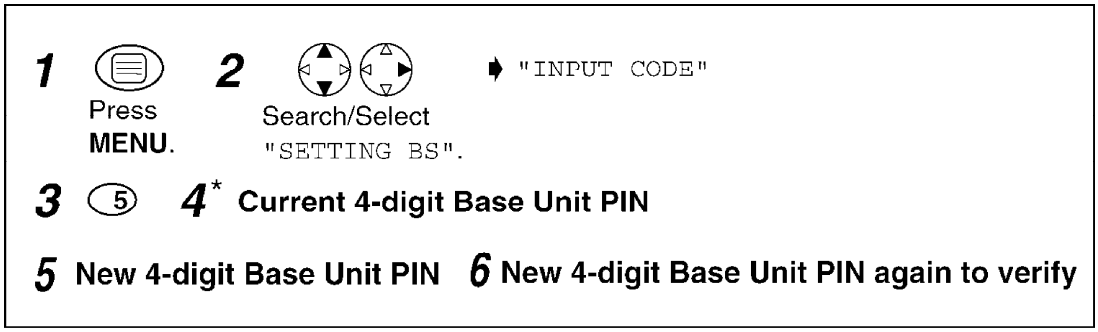
The AC adaptor must remain connected at all times (It is normal for the adaptor to feel warm during use).

6.2. Symbols Used in This Service Manual

Symbol	Meaning
	To search the desired item, press **UP** or **DOWN**.
	To select the desired item, press **RIGHT**.
	To search and then to select the desired item, press **UP** or **DOWN** then **RIGHT**.
	To move the cursor to the right or to the left, press **RIGHT** or **LEFT**.
➧	To go to the next step.
" "	The words in " " indicate the words in display.

6.3. PIN Code

6.3.1. Base Unit



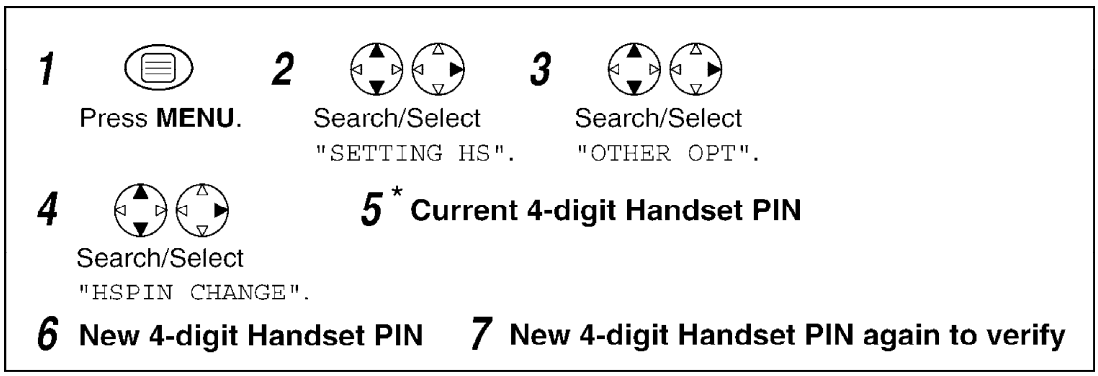
Changing Base Unit PIN
The factory preset is 0000. **Once you have programmed the base unit PIN, you cannot confirm it. We recommend you write down the base unit PIN. If you forget it, please consult our customer Hotline. 0180 - 525 13 67**

- To exit the operation, press **any time.**

For Service Hint:

*** : If the current 4-digit PIN is forgotten, press** **and you will be able to enter new PIN.**

6.3.2. Handset



Changing Handset PIN

The factory preset is 0000. **Once you have programmed the handset PIN, you cannot confirm it. We recommend you write down the handset PIN. If you forget it, please consult our customer Hotline. 0180 - 525 13 67**

- To exit the operation, press any time.

For Service Hint:

*** : If the current 4-digit PIN is forgotten, press and you will be able to enter new PIN.**

6.3.3. Reset Base Unit PIN to Default (0000) -When There is NO Handset Registered-

6.3.3.1. Symptom

There is no way to reset base PIN when there is no handset registered to the base.

6.3.3.2. Thinkable Situation

- Customer may ask to reset base PIN because they forget it.
- Customer may bring only a base unit for repair and there is no handset registered to the base (Need to register another handset to the base to confirm if the unit works properly after repair).
- When original handset has broken and customer purchased a new one, if customer forget base PIN, customer cannot register the new handset and may ask to reset the PIN.

6.3.3.3. Remedy

<Preparation>

Refer to JIGs and PC ().

<Connection>

1. Solder a pin or lead wire to GND, SDA, and SCLK on base PCB.

2. Plug in AC adaptor to the base.

3. Turn on the power to the JIG (9V).

4. Then connect the cable to each pins using clip.

As for the connection between JIG and PCB, see below photos.

<PC setting and how to reset base PIN to default (0000)>

1. Refer to PC Setting ().

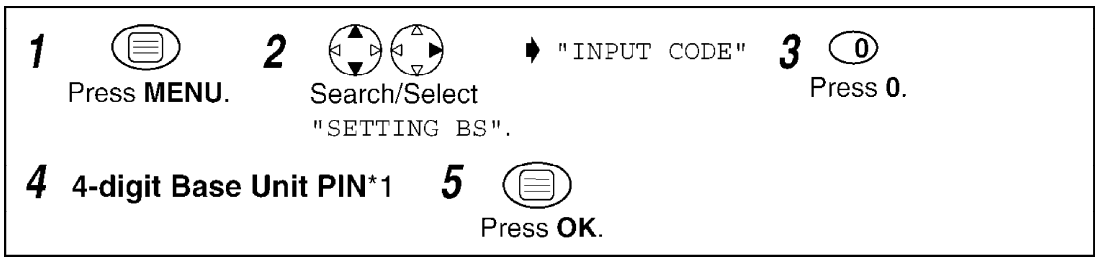
2. Next, execute <initbspin.bat> by typing "initbspin". The PC display will be shown as below.

3. After that, turn off DC power supply (9V) to the jig, unplug AC adaptor, and remove pins on PCB.
Then close the cabinet. The base pin returns to the default (0000) and you can register a handset to the base using the base PIN (0000).

6.4. Reset

6.4.1. Base Unit

If the base unit is reset, the Caller ID list will clear.



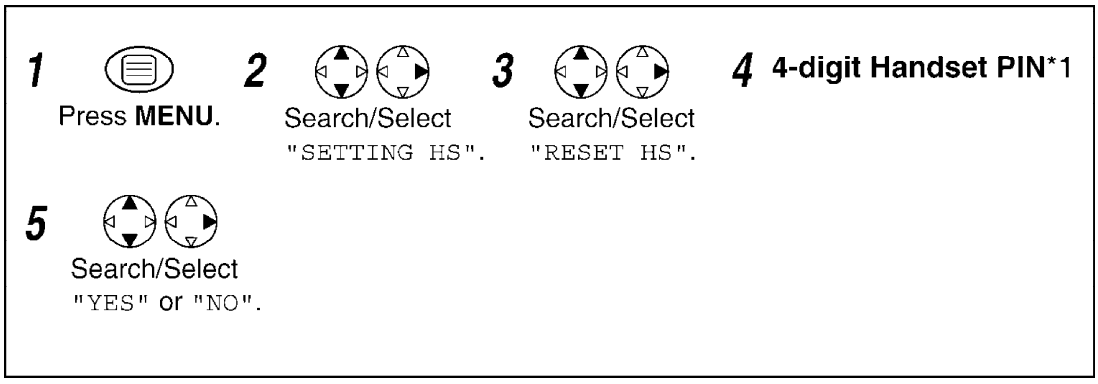
- To exit the operation, press any time.
- *1: The factory preset is 0000.

Base Unit Initial Settings

Function	Initial Setting	Remarks (selectable options
Ringer Mode	All Handsets	All Handsets/Specific Handset N
Number of Rings	3	Up to 6 rings
Flash/Earth	Flash	-
Flash Timing	200 msec	80/200 msec
Pause Timing	3 seconds	3 seconds/5 seconds
Call Restricted Handsets	All Clear	Each Handset can be set indivisually.
Call Restriction Numbers	All Clear	Up to 10 numbers (up to 8 digits
4-Digit Base Unit PIN	0000	-
ARS Setting	OFF	ON/OFF
Carrier Code	All Clear	-
Area Code	All Clear	-
Relation of Area Code	All Area Code to Carrier Code 1	1 to 5

6.4.2. Handset

You can reset all of the handset settings to their initial settings.



- To exit the operation, press **any time.**
- *1: The factory preset is 0000.

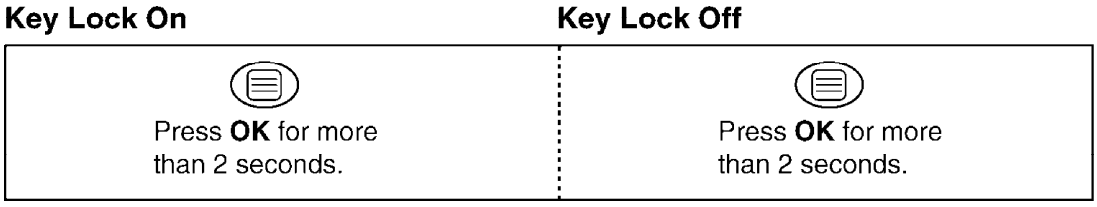
Handset Initial Settings

Function	Initial Setting	Remarks (selectable options
Time Alarm Mode	OFF	OFF/ON
Alarm Time	Clear	OFF/Once/Daily
Handset Ringer Volume	6	-
Handset External Ringer Pattern	1	20 patterns
Handset Internal Ringer Pattern	1	20 patterns
Handset Paging Tone Pattern	1	20 patterns
Handset Alarm Tone Pattern	1	20 patterns
Key Tone	ON	ON/OFF
Call Waiting Tone	ON	ON/OFF
Range Warning Alarm	OFF	OFF/ON
Battery Low Alarm	ON	ON/OFF
Standby Mode Display	Clock	Clock/OFF/Base No./Handset No
Talk Mode Display	Length of the Call	Talk Time/Phone No.
Display Language	German	10 languages
Call BAR	OFF	OFF/ON
Direct Call Mode	OFF	OFF/ON
Direct Call Number	Clear	Up to 24 digits
4-Digit Handset PIN	0000	-
Auto Talk	OFF	OFF/ON
Base Unit Access	Automatic Base Unit Access	Auto/Specific Base Unit No.
Redial Memory	All Clear	-
Handset Receiver Volume	Medium	Low/Medium/High

6.5. Key Lock

You can lock the handset dialling buttons. Only incoming calls are accepted while the key lock is on. The key lock is cancelled if the handset is turned off.

When the key lock is on, emergency calls cannot be made until key lock is cancelled.



- is displayed (Refer to Handset Display ()) and all dialling buttons are locked.

6.6. Recall Feature

RECALL is used to access special telephone services. Contact your Network provider for details. If your unit is connected to a PBX, pressing RECALL allows you to access some features of your host PBX such as transferring an extension call.

6.7. Dialling Pause for PBX line/long distance service users

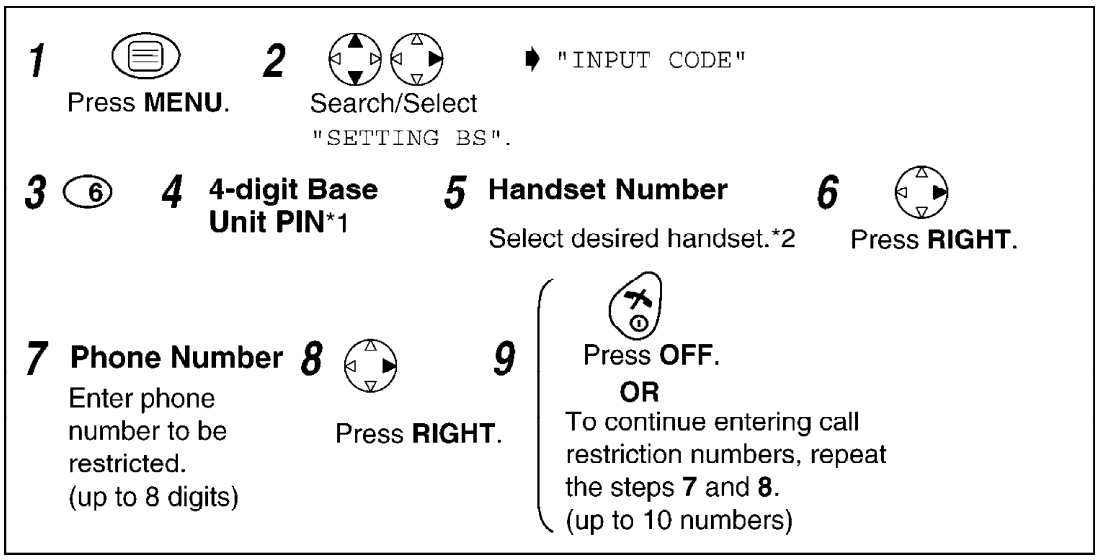
A dialling pause is used when a pause in the dialling of the phone number is necessary using a PBX or accessing a long distance service.
For example, when 9 (line access number) is dialled followed by a pause to access an outside line through a PBX:

- **Entering a pause prevents misdialling when you redial or dial a stored number.**
- **Pressing PAUSE once creates one pause. To extend the pause requirement time, press PAUSE accordingly.**

***1 is displayed (Refer to Handset Display ()) on the LCD.**

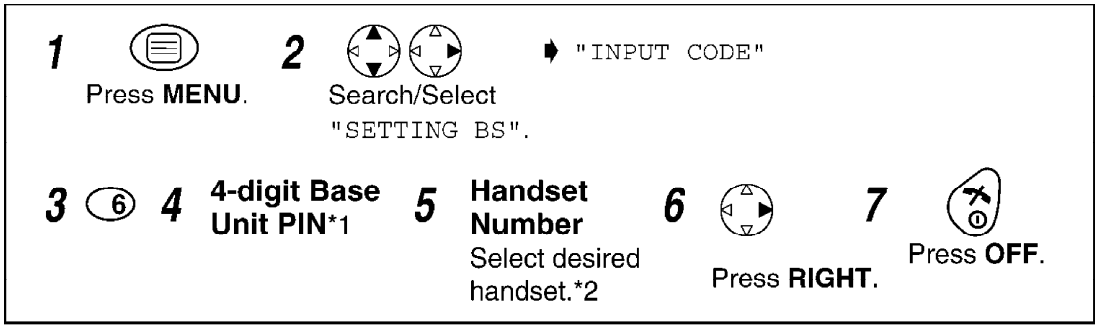
6.8. Call Restriction

You can restrict selected handset(s) from dialling selected phone numbers. You can assign up to 10 call restriction numbers (up to 8 digits). If you dial a restricted number, the call does not connect and restricted number flashes.



- To exit the operation, press any time.
- *1: The factory preset is 0000.
- *2: The selected handset number flashes.

6.9. Cancelling Call Restricted Handset(s)



- To exit the operation, press any time.
- *1: The factory preset is 0000.
- *2: The selected handset(s) will stop flashing.

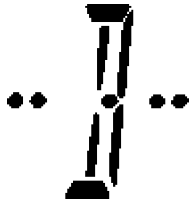
6.10. Call BAR On/Off (Call Prohibition On/Off)

You cannot make any dialling if call BAR is on.

1 Press **MENU**.
2 Search/Select "SETTING HS".
3 Search/Select "CALL OPT".
4 Search/Select "CALL BAR".
5 **4-digit Handset PIN***1
6 Search/Select "ON" or "OFF".*2

- To exit the operation, press **any time.**

- *1: The factory preset is 0000.

- *2: If "ON" is selected,  **is displayed (Refer to Handset Display ()).**

6.11. Selecting the Display Language

1 Press **MENU**.
2 Search/Select "SETTING HS".
3 Search/Select "DISPLAY OPT".
4 Search/Select "LANGUAGE".
5 Search/Select desired language.*1

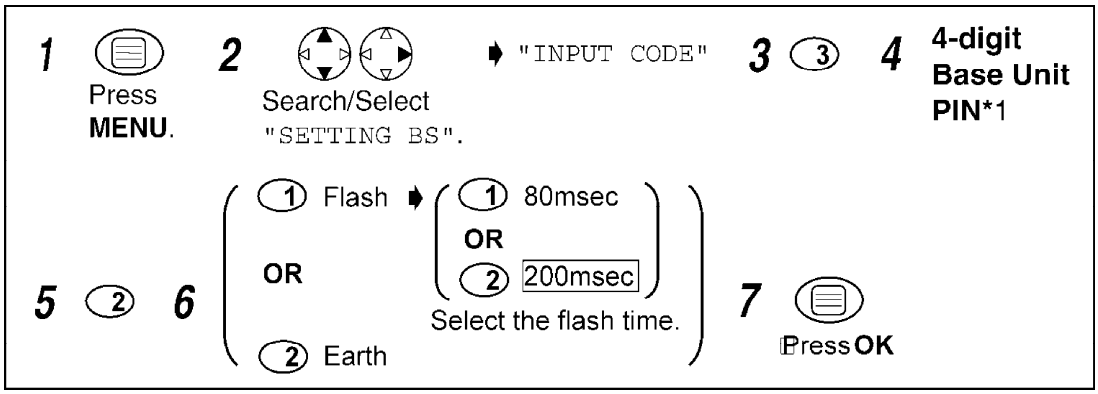
- To exit the operation, press **any time.**

- *1 You can select one of 10 languages. If you set a language you cannot read, reset the handset to its initial settings.
Press MENU → DOWN → RIGHT → UP → RIGHT → 4-digit Handset PIN → UP → OK
All handset setting will be reset to their initial settings, however, the Phonebook data will be saved.

6.12. Select Flash/Earth Mode

An earth relay can be installed as an option depending on your PBX requirements. Please consult our

Panasonic Service Centre for installation. On installation, you can select flash or earth mode to suit your PBX or Network provider.



- To exit the operation, press any time.

- *1: The factory preset is 0000.

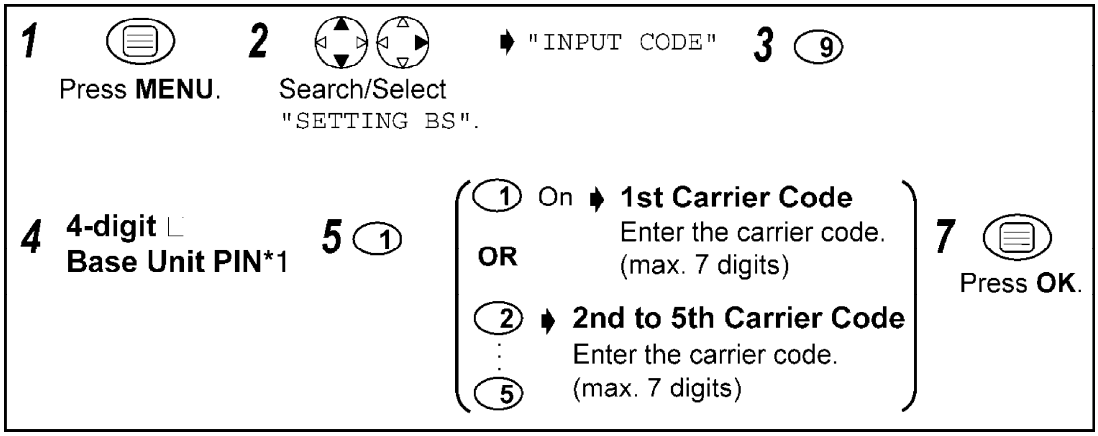
For Service Hint: Refer to Flash Time setting ()

6.13. Automatic Route Selection

Automatic Route Selection is a feature which selects the least expensive carrier (network) service available, when making long distance calls.
When area code(s) have been related to carrier codes, you will need only dial the area code, the lower costing carrier (network) will automatically be dialled.
Please contact your telephone company regarding the carrier telephone charges.

6.13.1. Storing the Carrier Code(s)

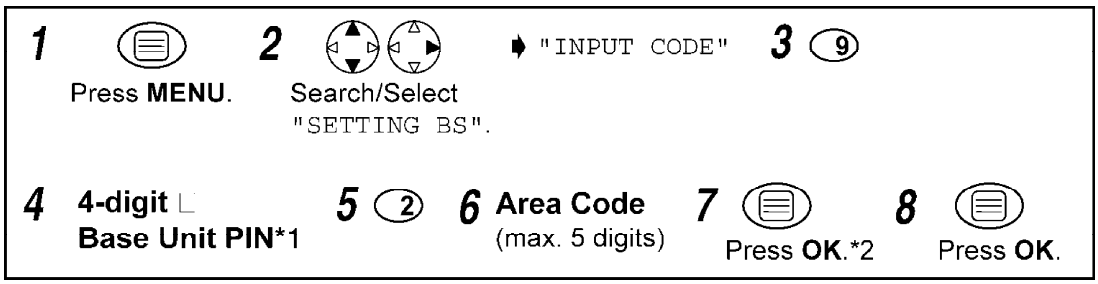
Firstly you must subscribe to a second carrier (network) service. You can subscribe to a limit of 5 carrier services. Then store the code as follows:



- To exit the operation, press any time.
- *1: The factory preset is 0000.

6.13.2. Storing the Area Code(s)

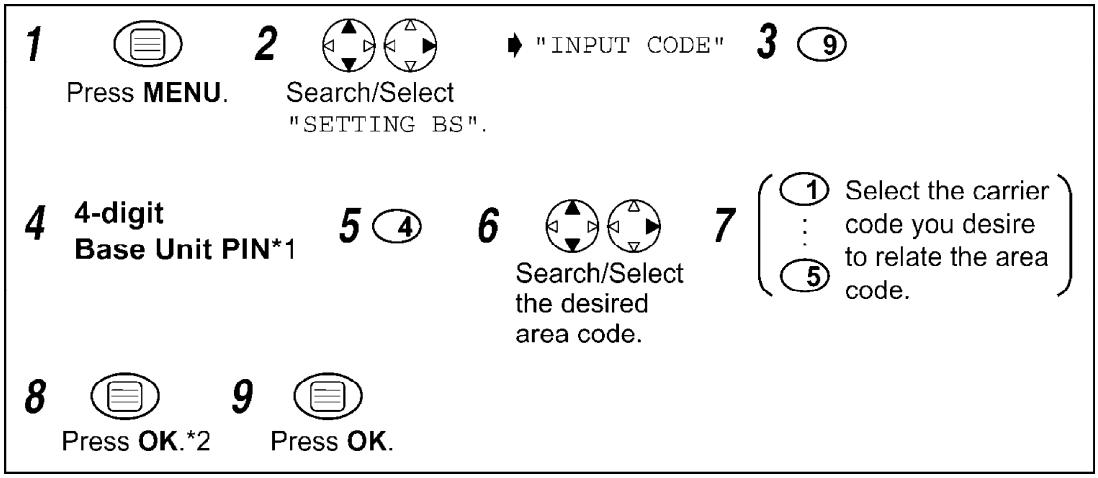
Store the area code(s) for which the chosen carrier (network) service charge rates are lower than the original carrier (network) service. Up to 25 area codes can be stored.



- To exit the operation, press any time.
- *1: The factory preset is 0000.
- *2 If you need more area code storing, repeat the steps from 6.

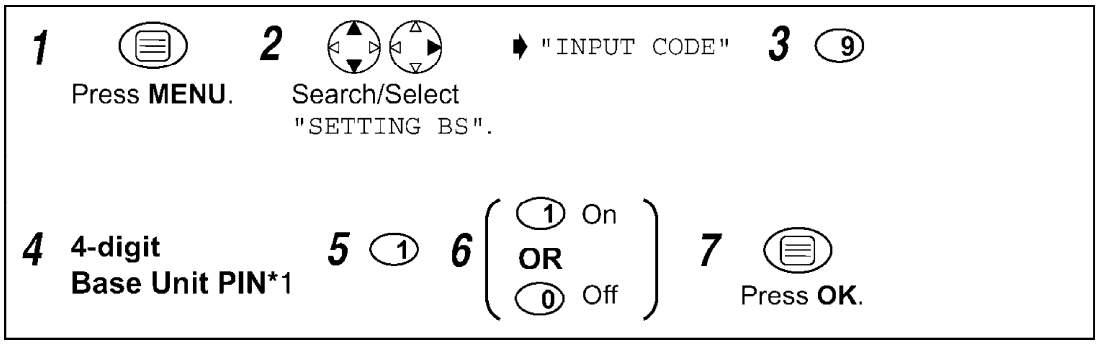
6.13.3. Relate the Area Code(s) to the Carrier Code(s)

After storing carrier code(s) and area code(s), you must relate the stored area code(s) to your chosen lower costing carrier code. It is only necessary to relate area codes to carrier codes if more than one carrier code has been stored. If only one carrier code has been stored, any area codes you store (up to 25) will automatically be dialled with that carrier code.



- To exit the operation, press any time.
- *1: The factory preset is 0000.
- *2 If you need more relating area codes to carrier codes, repeat the steps from 5.

6.13.4. Automatic Route Selection On/Off



- To exit the operation, press any time.
- *1: The factory preset is 0000.

6.14. Summary of Programmable Functions

You can select and execute the following functions by pressing direct command as follows without programming.
These operations need to be done with the Handset near the base unit.

Press **. Press** **or** **until the arrow points to**

"Setting Base" **, then press** **.**

"Input Command" **is displayed.*1**

<Direct command>

1 ➧ 4-digit Base Unit PIN ➧ 1	Setting the All Handsets Mode
1 ➧ 4-digit Base Unit PIN ➧ 2	Setting the Selected Handsets Mode
1 ➧ 4-digit Base Unit PIN ➧ 3	Setting the Selected then All Handsets Mode
3 ➧ 4-digit Base Unit PIN ➧ 2	Select Flash/Earth Mode
3 ➧ 4-digit Base Unit PIN ➧ 3	Pause Timing
5	Changing Base Unit PIN
6	Call Restriction
7	Cancelling a Handset
9 ➧ 4-digit Base Unit PIN ➧ 1	Automaic Route Selection
0	Reset Base Unit Settings
*	Setting the Clock
* *	Setting the Date

***1 If any key is not pressed over 60 seconds, the display will return to "Setting Base".**
***2 Refer to PIN Code () for more details.**

7. DISPLAY

7.1. Handset Display

Icon	Displays	Icon	Displays
	Within range of a base unit		Answering System ON
	Out of range/No registration/ No power on base unit		Call Bar ON
	Paging		Direct Call ON
	Making or answering calls		Key Lock ON
	Phonebook Mode		Ringer Volume OFF
	In Setting Mode		Dialling Pause
	Battery strength is low		
	Battery strength is high		

7.2. Before Requesting Help (Troubleshooting)

If you experience any problems with the normal use of your apparatus, you should unplug it from the telephone outlet and connect a known working telephone in its place.

If the known working telephone still has problems, then please contact the customer service department of your Network provider.
If it operates correctly, then the problem is likely to be a fault in your apparatus.
In this case, contact your supplier for advice. Your Network provider may charge you if they attend a service call that is not due to apparatus supplied by them.
Turn the power OFF then ON (Handset) / Disconnect then connect the AC adaptor (Base Unit).

Problem	Possible cause	Solution
NO LCD display in handset.	• Handset not turned on.	• Turn on power. →(Refer to **Power On/Off**.)
Handset will not turn on.	• Batteries not inserted. • Batteries not charged.	• Insert the 2 rechargeable batteries supplied . • Place handset in base and connect AC adaptor to base and AC outlet (full charge period 7 hrs).
Batteries charge icon not counting up.	• Dirty charge contact. • Base not powered up.	• Clean charge / battery contact and retry charge. • Connect AC adaptor to base unit and AC outlet.
icon flashes.	• Handset not registered to base. • Handset out of range of base. • No power into base unit.	• Register handset to base. • Move handset closer to base. • Connect AC adaptor to base unit and AC outlet.
Handset busy tone heard when is pressed.	• Handset out of range of base. • Another handset in use.	• Move handset closer to base. • Wait for the other user to complete call.
No dial tone.	• Telephone line not connected.	• Insert telephone cord to network. • Turn power OFF then ON.
Cannot dial out.	• Call BAR set. • Particular dialled number is restricted. • Key lock mode ON.	• Turn feature off. →(Refer to **Call BAR On/Off**.) • Remove number from call restricted list. • Turn key lock OFF. →(Refer to **Key Lock**.)
Handset will not ring.	• Ringer switched off.	• Set ringer to one of 6 volume levels.
Last number redial does not work.	• Number exceeded 24 digits.	• Redial manually.
No Caller ID number displayed.	• Service not supplied. • Caller has withheld info.	• Caller ID service must be arranged with Network provider.
icon flashes.	• Battery low.	• Recharge batteries.
icon is disapeared.	• Wrong battery type selected.	• Set the correct battery type.
Cannot register handset to base.	• Max. number of bases already registered to handset. • Max. number of handsets already registered to base unit. • Wrong PIN number entered (Default 0000). • Electrical noise in local area.	• Delete unused base registrations from handset. • Delete unused handset registrations from base. • If PIN number is lost, contact the Panasonic Service Centre. →(Refer to **Call Restriction.**) • Move base/handset away from sources of electrical noise (e.g TV, radio).
"CLOCK" is flashed.	• A mains power failure. • Answering system is trying to be set without clock/date set.	• Reset the clock/date. • Set the clock/date.

Answering System

Problem	Possible cause	Solution
The answering system is on, but incoming messages are not recorded.	• The recording time is set to "greeting only".	• Select "1 minute" or "unlimited.
	• Memory is full.	• Erase some or all of the messages.
You cannot operate the answering system from a touch tone phone.	• Incorrect remote code entered.	• Enter the correct remote code.
	• Tone are too short to activate the unit.	• Press each button firmly.
	• The answering system is off.	• Turn on the answering system.
You cannot operate the answering system with the handset.	• Someone is operating the answering system.	• Retry when other user has finished operation.
	• You are too far from the base unit.	• Move closer to the base unit.
	• The unit is recording a message.	• To answer the call, press **TALK**.
While recording a greeting message, the unit starts to ring and stops recording.	• A call is being received.	• To answer the call, press **TALK**. The recording stops halfway. Start from the beginneing after hanging up.
During playback, the unit starts to ring and stops playback.	• A call is being received.	• To answer the call, press **TALK**.

Cross Reference:
Power On/Off ()
Call BAR On/Off (Call Prohibition On/Off) ()
Key Lock ()
Call Restriction ()

8. OPERATIONS

8.1. Power On/Off

Power on	Power off
Press for more than 1 second. *1	Press for more than 2 seconds. *2

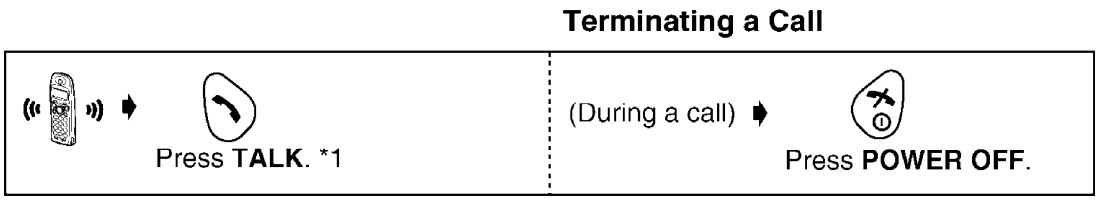
***1 When** **button is released, the display changes to the standby mode.**
***2 The display goes blank.**

8.2. Making a Call

Pre-dialling	Post-dialling
1 Phone Number *1 *2* Press **TALK**.	*1* Press **TALK**. *2* Phone Number

***1 If you need correction, press CLEAR. Digit is cleared to the left, then enter numbers.**

8.3. Answering a Call

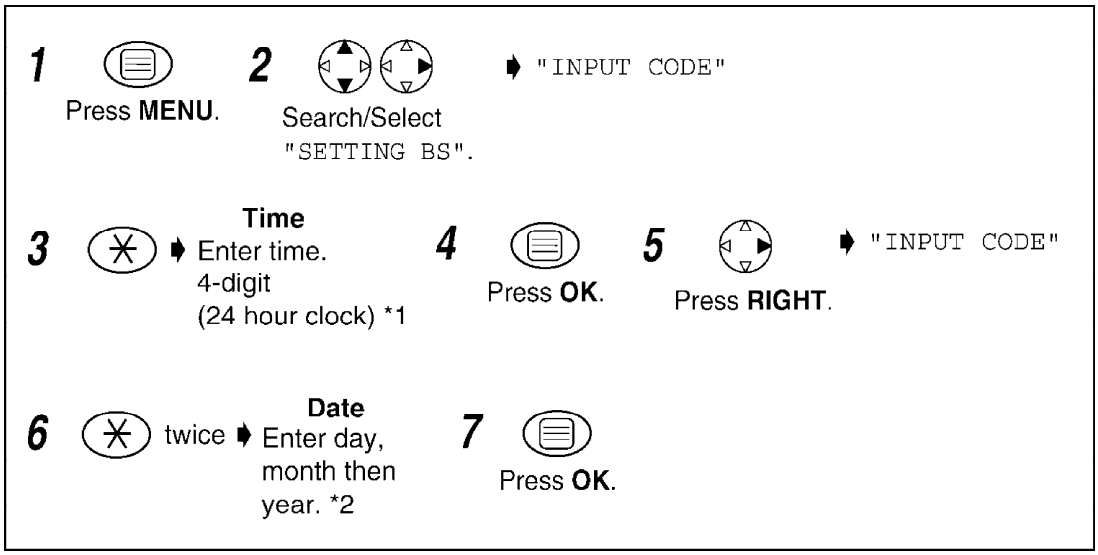


- Each ringer will start ringing with lower volume then gradually increase the volume when receiving a call.

***1 You can also answer a call by pressing any dialling button, INTERCOM, #, or ✳.**

8.4. Setting the Clock/Date

After a mains power failure the clock needs to be reset. Ensure that icon is not flashing.



- To exit the operation, press any time.

***1 For example, to set 7:15, enter 0715.**

***2 For example, to set the 16th of February, 2003, enter 160203.**

8.5. Phonebook

You can store up to 20 caller information in the phonebook. If you received a call from the same phone number you stored with a name in the phonebook, the display will show the caller's name.

8.5.1. Storing a Caller Information

1 Press **MENU**.

2 Select "NEW PHONE".

3 **Phone Number**
Enter phone number. (max. 24 characters) *1

4 Press **OK**.

5 **Name**
Enter name. (max. 9 characters)*1

6 Press **OK**.*2

- To exit the operation, press ⏻ any time.

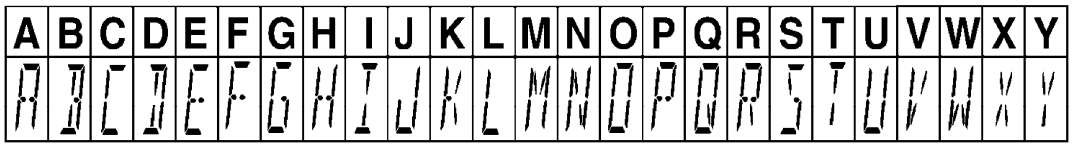
***1 If you need correction, press RIGHT or LEFT to move cursor then clear a character by pressing CLEAR, and/or enter characters. Characters are cleared or added to the left of the flashing character. To enter characters, see Character Selection below.**

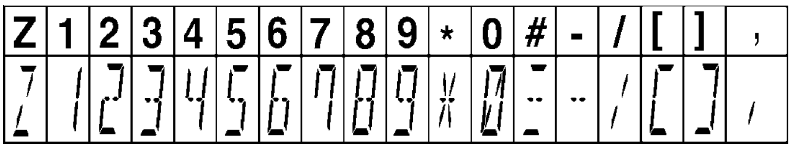
***2 To continue storing another caller information, repeat the steps from 3.**

Character Selection

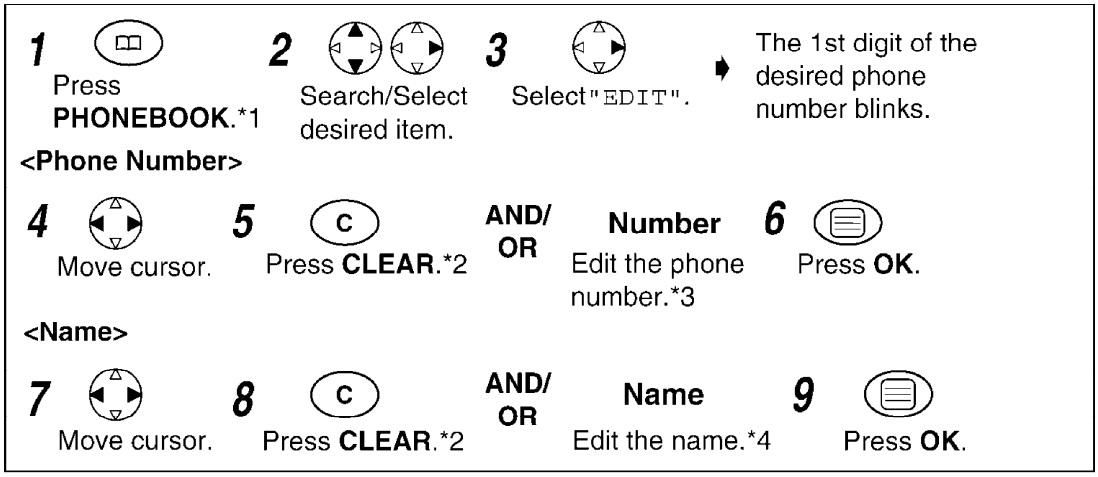
Keys	Number of times key is pressed								Keys	Number of times key is pressed				
	1	2	3	4	5	6	7	8		1	2	3	4	5
1	#	[	]	*	,	-	/	1	6	M	N	O	6	
2	A	B	C	2					7	P	Q	R	S	7
3	D	E	F	3					8	T	U	V	8	
4	G	H	I	4					9	W	X	Y	Z	9
5	J	K	L	5					0	Blank	0			

Character Table

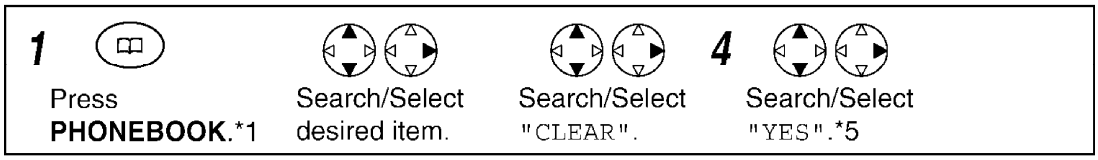




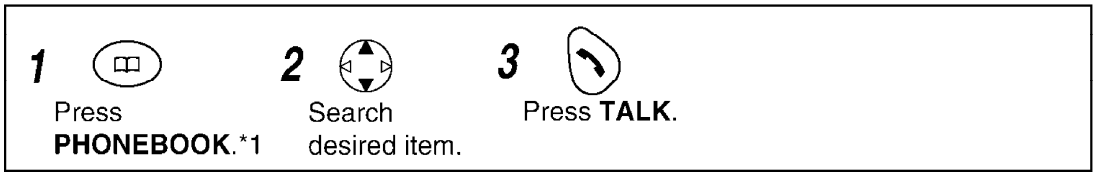
Editing a Caller Information



Clearing a Caller Information



Dialling with the Phonebook



- To exit the operation, press **any time.**

***1 If there is no item stored in the phonebook, the display shows** "NO ITEM".

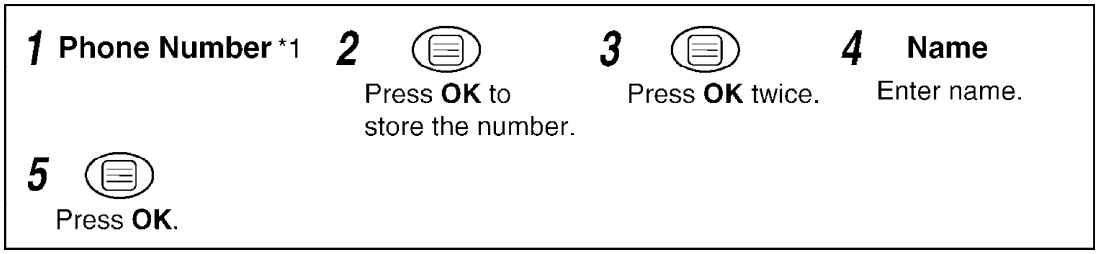
***2 Digits are cleared to the left of the flashing digit.**

***3 Digits are added to the left of the flashing digit. If you need to clear or add more than one digit, repeat the steps from 4.**

***4 Characters are added to the left of the flashing character. If you need to clear or add more than one character, repeat the steps from 7.**

***5 To continue clearing another caller information, repeat the steps from 2.**

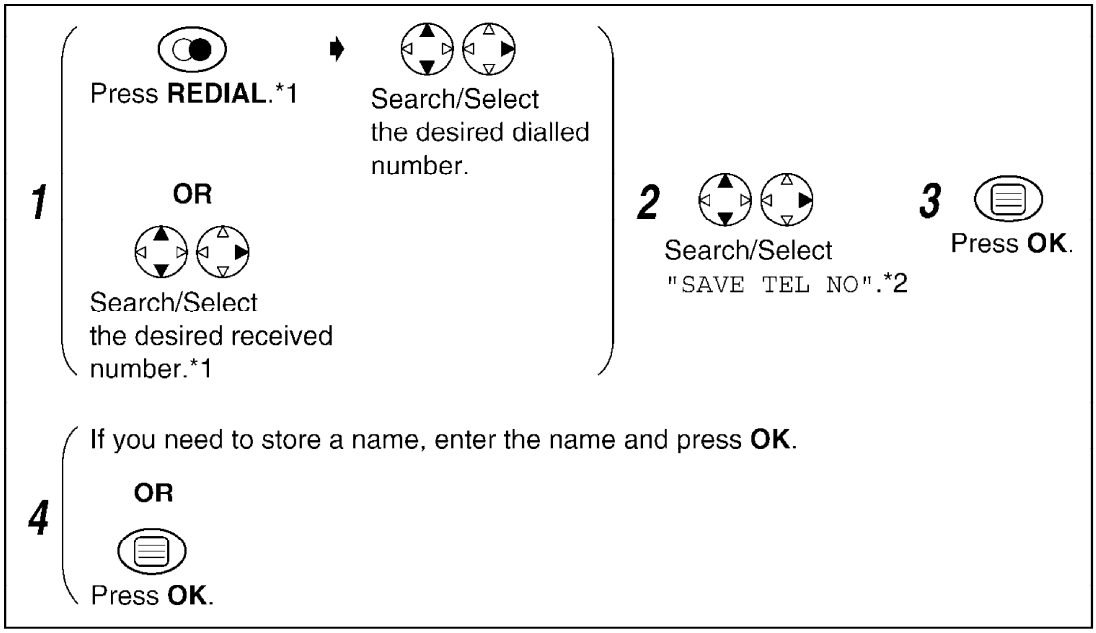
8.5.2. Storing the Phone Number into the Phonebook When Pre-dialling



- To exit the operation, press any time.

***1 If you need correction, press CLEAR. Digit is cleared to the left, then enter numbers.**

8.5.3. Storing the Number from the Redial/Caller List into the Phonebook



- To exit the operation, press any time.

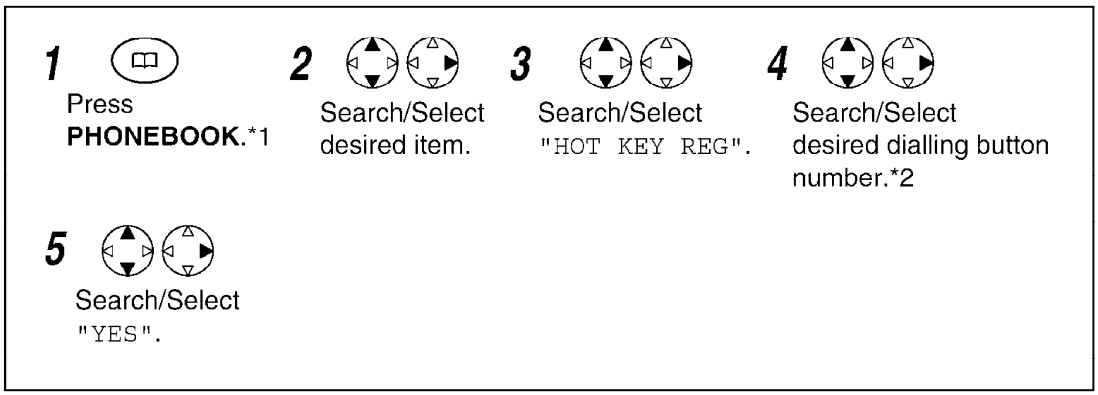
***1 If there is no item stored in the redial/caller list, the display shows "NO ITEM".**

***2 If you need correction, press RIGHT or LEFT to move cursor then clear a character by pressing CLEAR, and/or enter digits. Digits are cleared or added to the left of the flashing digit.**

8.5.4. Hot Key (: Speed Dial)

You can assign the dialling buttons 1 through 9 as hot keys. You can choose 9 phone numbers from the phonebook.

Registering a Phone Number as a Hot Key



Dialling with Hot Key

Clearing the Hot Key Registration

- To exit the operation, press any time.

***1 If there is no item stored in the phonebook, the display shows "NO ITEM".**
***2 The number is flashing if the dialling button is already assigned as a hot key.**
***3 Phonebook registration will be remained even hot key registration is cleared.**

9. DISASSEMBLY INSTRUCTIONS

9.1. Base Unit

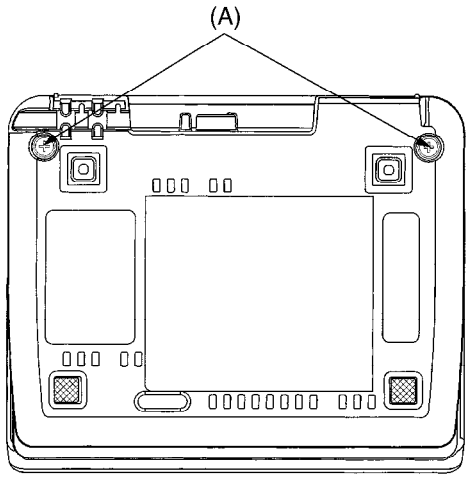


Fig. 1

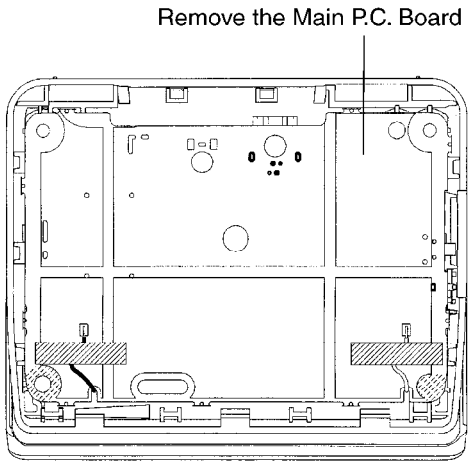


Fig. 2

Shown in Fig.-	To Remove	Remove
1	Lower Cabinet	Screws (2.6 × 12).....(A) × 2
2	Main P.C. Board	Main P.C. Board

9.2. Handset

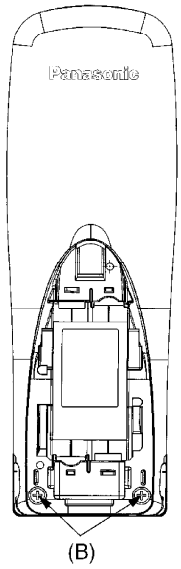


Fig. 3

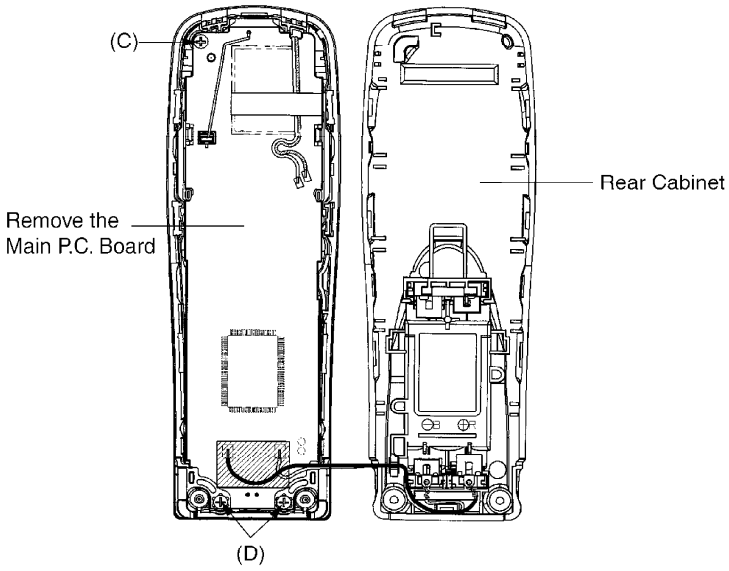


Fig. 5

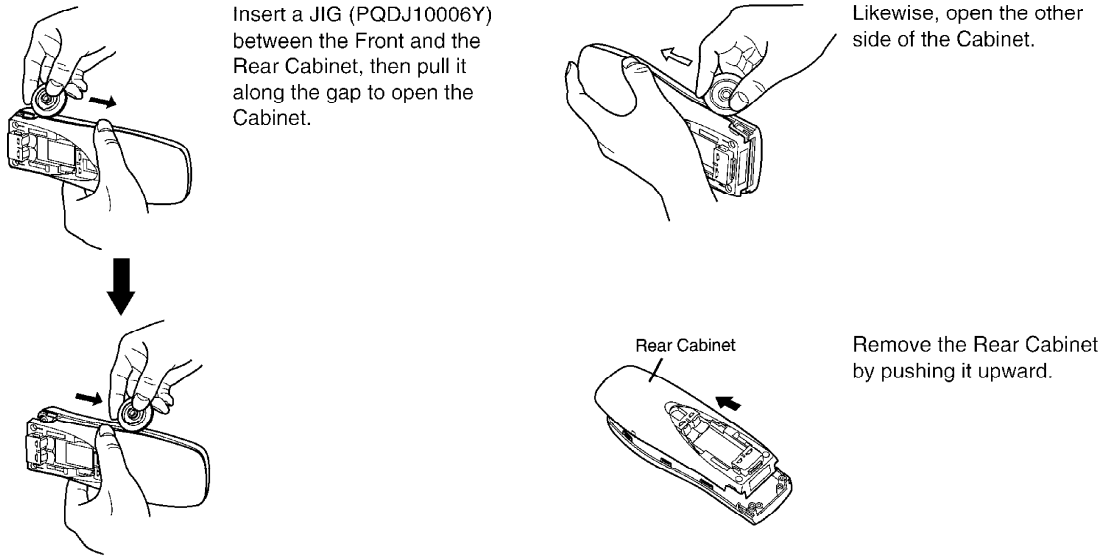

Insert a JIG (PQDJ10006Y) between the Front and the Rear Cabinet, then pull it along the gap to open the Cabinet.
Likewise, open the other side of the Cabinet.
Rear Cabinet
Remove the Rear Cabinet by pushing it upward.

Fig. 4

Shown in Fig.-	To Remove	Remove
3	Rear Cabinet	Screws (2 × 10).....(B) × 2
4	Rear Cabinet	Follow the procedure.
5	Main P.C. Board	Screw (2 × 8).....(C) × 1
		Screws (2 × 8).....(D) × 2
		Main P.C. Board

9.3. Charger Unit

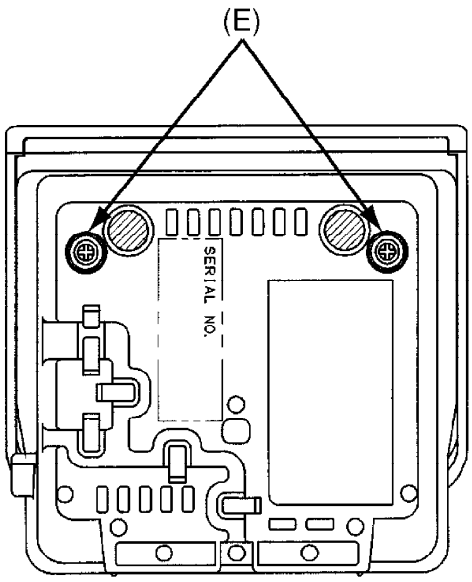


Fig. 6

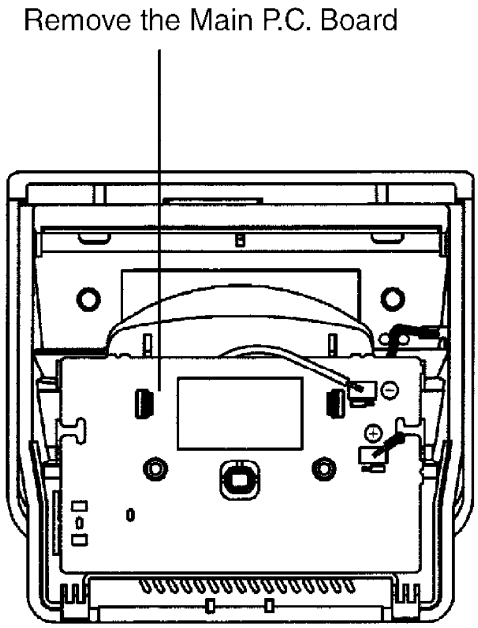


Fig. 7

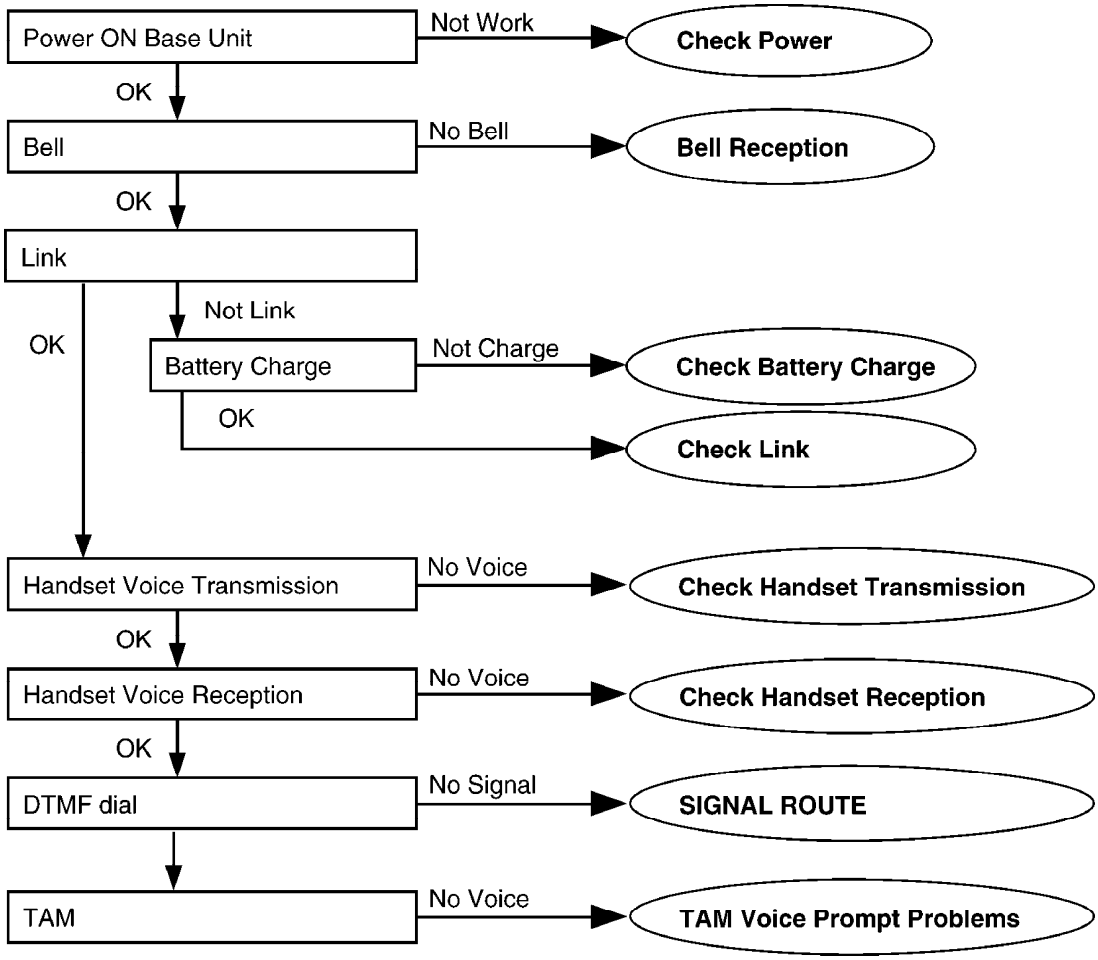
Shown in Fig.-	To Remove	Remove
6	Lower Cabinet	Screws (2.6 × 14).....(E) × 2
7	Main P.C. Board	Main P.C. Board

10. ASSEMBLY INSTRUCTIONS

10.1. Warning When Constructing the Base Unit

11. TROUBLESHOOTING GUIDE

Flow Chart

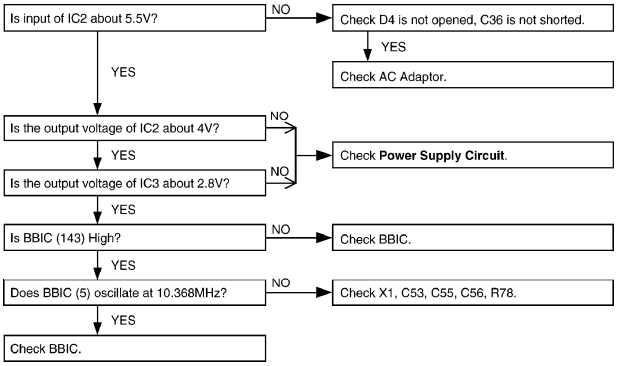


Cross Reference:
Check Power ()
Bell Reception ()
Check Battery Charge ()
Check Link ()
Check Handset Transmission ()
Check Handset Reception ()
SIGNAL ROUTE ()
TAM Voice Prompt Problems ()

11.1. Check Power

11.1.1. Base Unit

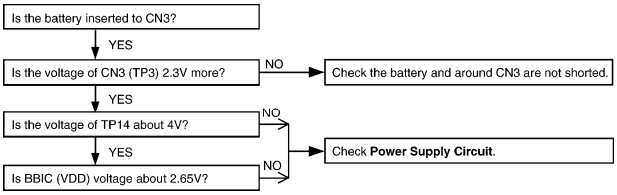
Is the AC Adaptor inserted into AC outlet? (Check AC Adaptor's specification.)



Cross Reference
Power Supply Circuit ()

Note:
BBIC is IC8.

11.1.2. Handset

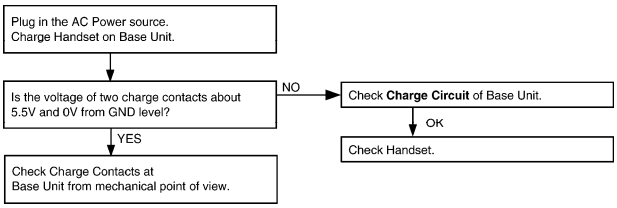


Cross Reference
Power Supply Circuit/Reset Circuit ()

Note:
BBIC is IC1.

11.2. Check Battery Charge

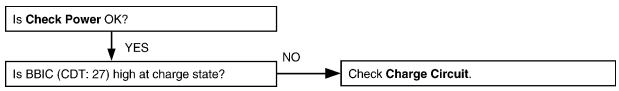
11.2.1. Base Unit


Plug in the AC Power source.
Charge Handset on Base Unit.
Is the voltage of two charge contacts about 5.5V and 0V from GND level?
NO
Check Charge Circuit of Base Unit.
OK
Check Handset.
YES
Check Charge Contacts at Base Unit from mechanical point of view.

Cross Reference:

Charge Circuit ()

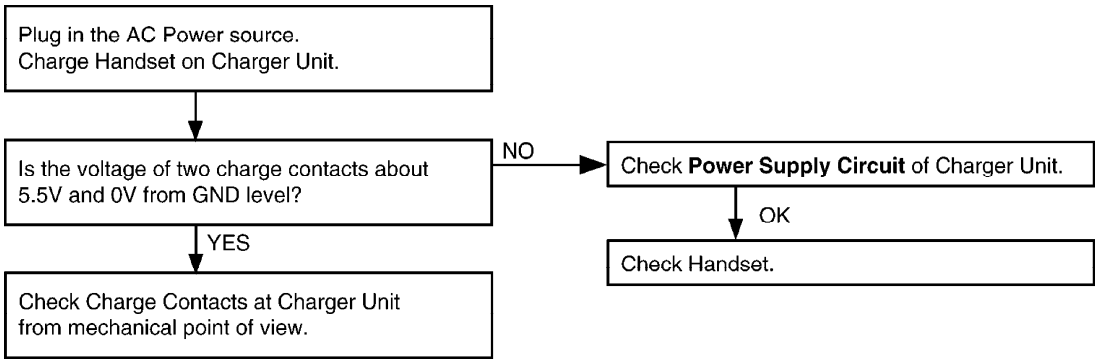
11.2.2. Handset



Cross Reference:
Check Power ()
Charge Circuit ()

Note:
BBIC is IC1.

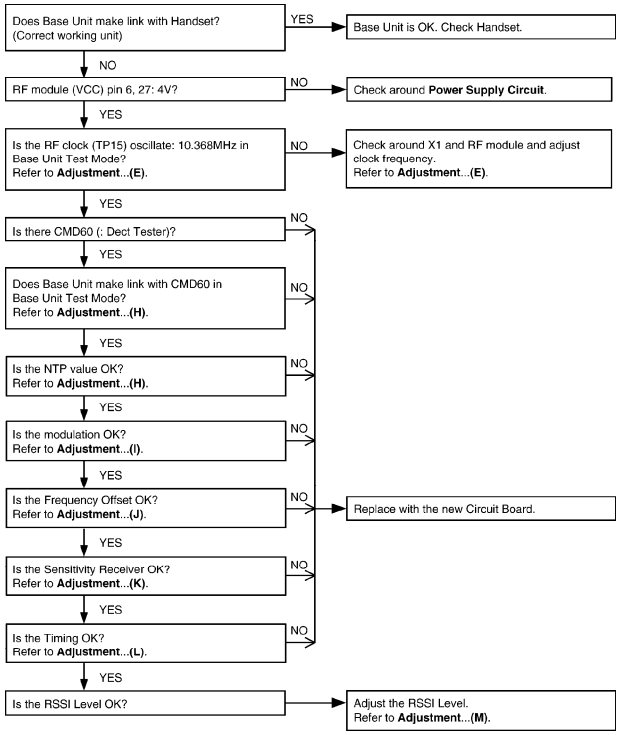
11.2.3. Charger Unit


Plug in the AC Power source.
Charge Handset on Charger Unit.
Is the voltage of two charge contacts about 5.5V and 0V from GND level?
NO
Check Power Supply Circuit of Charger Unit.
OK
Check Handset.
YES
Check Charge Contacts at Charger Unit from mechanical point of view.

Cross Reference:
Power Supply Circuit ()

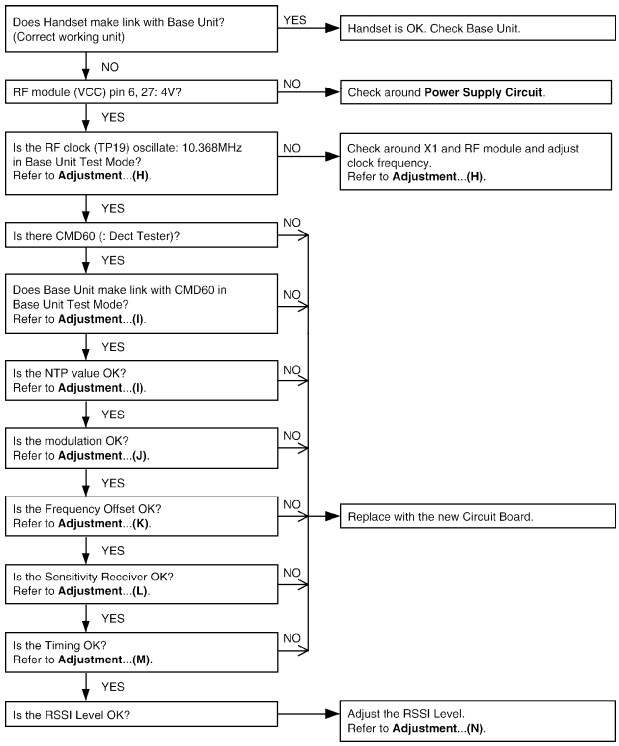
11.3. Check Link

11.3.1. Base Unit


Does Base Unit make link with Handset? (Correct working unit)
YES
Base Unit is OK. Check Handset.
NO
RF module (VCC) pin 6, 27: 4V?
NO
Check around Power Supply Circuit.
YES
Is the RF clock (TP15) oscillate: 10.368MHz in Base Unit Test Mode? Refer to Adjustment...(E).
NO
Check around X1 and RF module and adjust clock frequency. Refer to Adjustment...(E).
YES
Is there CMD60 (: Dect Tester)?
NO
YES
Does Base Unit make link with CMD60 in Base Unit Test Mode? Refer to Adjustment...(H).
NO
YES
Is the NTP value OK? Refer to Adjustment...(H).
NO
YES
Is the modulation OK? Refer to Adjustment...(I).
NO
YES
Is the Frequency Offset OK? Refer to Adjustment...(J).
NO
Replace with the new Circuit Board.
YES
Is the Sensitivity Receiver OK? Refer to Adjustment...(K).
NO
YES
Is the Timing OK? Refer to Adjustment...(L).
NO
YES
Is the RSSI Level OK?
Adjust the RSSI Level. Refer to Adjustment...(M).

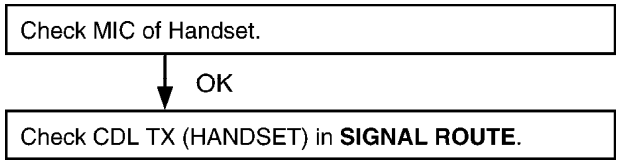
Cross Reference:
Power Supply Circuit ()
Adjustment (Base Unit) ()

11.3.2. Handset


Does Handset make link with Base Unit? (Correct working unit)
YES
Handset is OK. Check Base Unit.
NO
RF module (VCC) pin 6, 27: 4V?
NO
Check around Power Supply Circuit.
YES
Is the RF clock (TP19) oscillate: 10.368MHz in Base Unit Test Mode? Refer to Adjustment...(H).
NO
Check around X1 and RF module and adjust clock frequency. Refer to Adjustment...(H).
YES
Is there CMD60 (: Dect Tester)?
NO
YES
Does Base Unit make link with CMD60 in Base Unit Test Mode? Refer to Adjustment...(I).
NO
YES
Is the NTP value OK? Refer to Adjustment...(I).
NO
YES
Is the modulation OK? Refer to Adjustment...(J).
NO
YES
Is the Frequency Offset OK? Refer to Adjustment...(K).
NO
Replace with the new Circuit Board.
YES
Is the Sensitivity Receiver OK? Refer to Adjustment...(L).
NO
YES
Is the Timing OK? Refer to Adjustment...(M).
NO
YES
Is the RSSI Level OK?
Adjust the RSSI Level. Refer to Adjustment...(N).

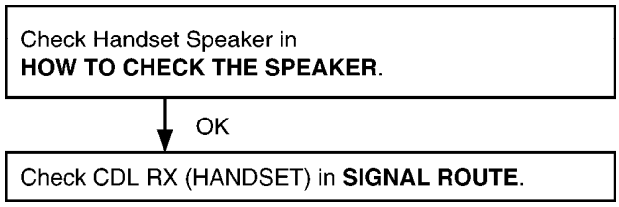
Cross Reference
Power Supply Circuit ()
Adjustment ()

11.4. Check Handset Transmission



Cross Reference:
SIGNAL ROUTE ()

11.5. Check Handset Reception

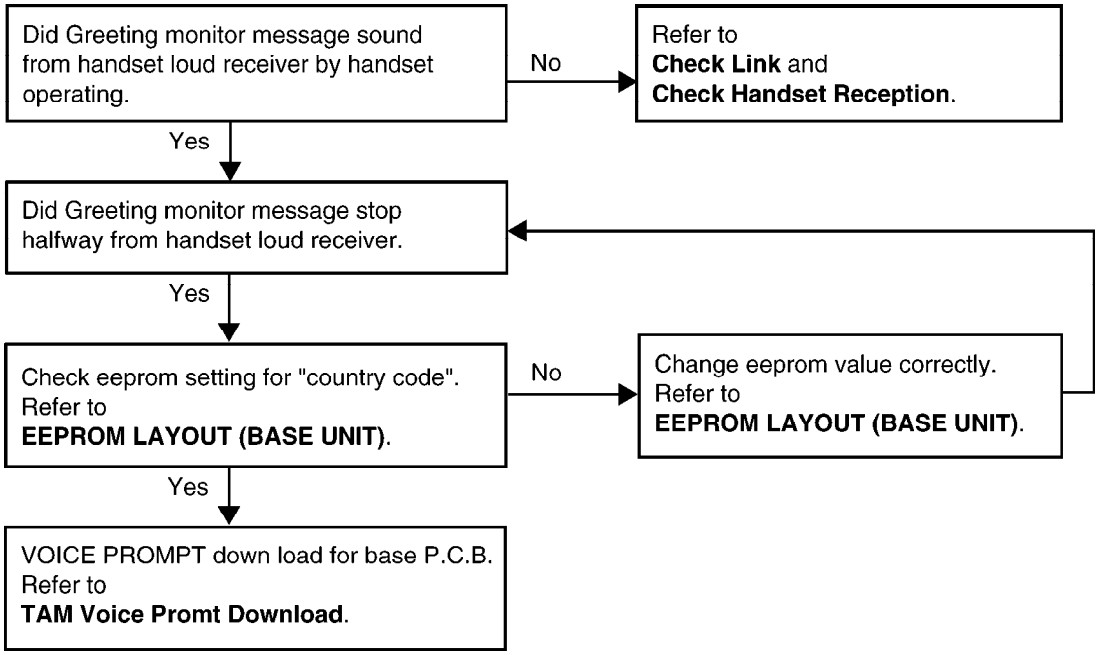


Cross Reference:
HOW TO CHECK THE HANDSET SPEAKER ().
SIGNAL ROUTE ()

11.6. Check Caller ID

Cross Reference:
SIGNAL ROUTE ()

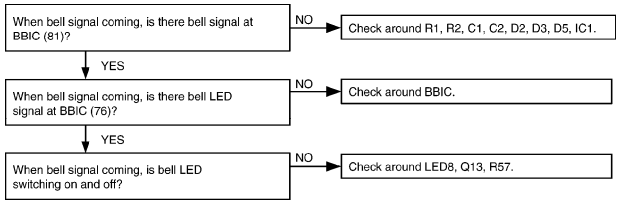
11.7. TAM Voice Prompt Problems


Did Greeting monitor message sound from handset loud receiver by handset operating.
No
Refer to
Check Link and
Check Handset Reception.
Yes
Did Greeting monitor message stop halfway from handset loud receiver.
Yes
Check eeprom setting for "country code". Refer to
EEPROM LAYOUT (BASE UNIT).
No
Change eeprom value correctly. Refer to
EEPROM LAYOUT (BASE UNIT).
Yes
VOICE PROMPT down load for base P.C.B. Refer to
TAM Voice Promt Download.

Cross Reference:
Check Link ()
Check Handset Reception ()
EEPROM LAYOUT (BASE UNIT) ()
TAM Voice Prompt Download ()

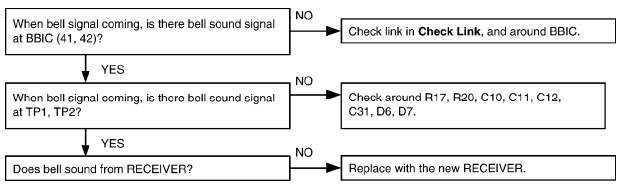
11.8. Bell Reception

11.8.1. Base Unit


When bell signal coming, is there bell signal at BBIC (81)?
NO
Check around R1, R2, C1, C2, D2, D3, D5, IC1.
YES
When bell signal coming, is there bell LED signal at BBIC (76)?
NO
Check around BBIC.
YES
When bell signal coming, is bell LED switching on and off?
NO
Check around LED8, Q13, R57.

Note:
BBIC is IC8.

11.8.2. Handset


When bell signal coming, is there bell sound signal at BBIC (41, 42)?
NO
Check link in **Check Link**, and around BBIC.
YES
When bell signal coming, is there bell sound signal at TP1, TP2?
NO
Check around R17, R20, C10, C11, C12, C31, D6, D7.
YES
Does bell sound from RECEIVER?
NO
Replace with the new RECEIVER.

Cross Reference:

Telephone Line Interface ()
Check Link ()

Note:
BBIC is IC1.

12. CHECK PROCEDURE (BASE UNIT)

12.1. Preparation

12.1.1. Equipment Required

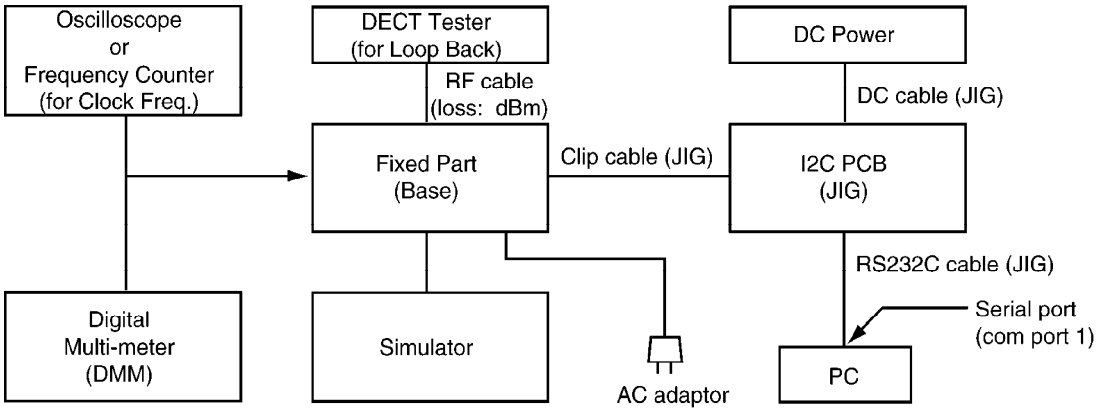
- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz (precision; ±4ppm).
Hewlett Packard, 53131A is recommended.
- DC power: it must be able to output at least 1A current under 9V.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

12.1.2. JIGs and PC

- EEPROM serial JIGs
1. I2C PCB: PQZZTCD705BX
2. RS232C cable: PQZZ1CD705BX
3. Clip cable: PQZZ2CD705BX
4. DC cable: PQZZ3CD705BX
- PC which runs in DOS mode
- Batch file for setting: PQZZTCD420E

12.2. PC Setting

12.2.1. Connections



12.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory to the one with “RTX_COM” contained.
3. Type “SET RTX_COM=1” from the keyboard (when COM port 1 is used for the connection).
4. Type “doskey”.

Note:
See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type “rdeeprom 00 00 FF”, and the data from address “00 00” to “FF” is read out.
readid	Read ID (RFPI)	Type “readid”, and the registered ID is read out.
writeid	Write ID (RFPI)	Type “writeid 00 18 E0 0E 98”, and the ID “0018 E0 0E 98” is written.
setfreq	adjust Frequency of RFIC	Type “setfreq nn nn”.
hookoff	off-hook mode on Base	Type “hookoff”.
hookon	on-hook mode on Base	Type “hookon”.
Getchk	Read checksum	Type “getchk”.
Wreeprom	write eeprom	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.
InitBsPIN.bat	Initial Base PIN to "0000"	Type "initBsPIN"

12.3. TAM Voice Prompt Download

1. Connect the parallel cable from the VOICE PROMPT DOWN LOADER to TP101, TP102, TP103, TP104 and TP105.
2. Connect the serial cable from the PROM DOWN LOADER to J103, J104 and J105 of base P.C.B.
3. Switch on the 6V supply.
4. Invoke "vploadenable" batch file from the PC
5. Invoke "go" batch file from the PC.

13. CHECK PROCEDURE (HANDSET)

13.1. Preparation

13.1.1. Equipment Required

- DECT tester: Rohde & Schwarz, CMD 60 is recommended.
- Frequency counter: it must be precise to be able to measure 1Hz

(precision; ±4ppm).
Hewlett Packard, 53131A is recommended.

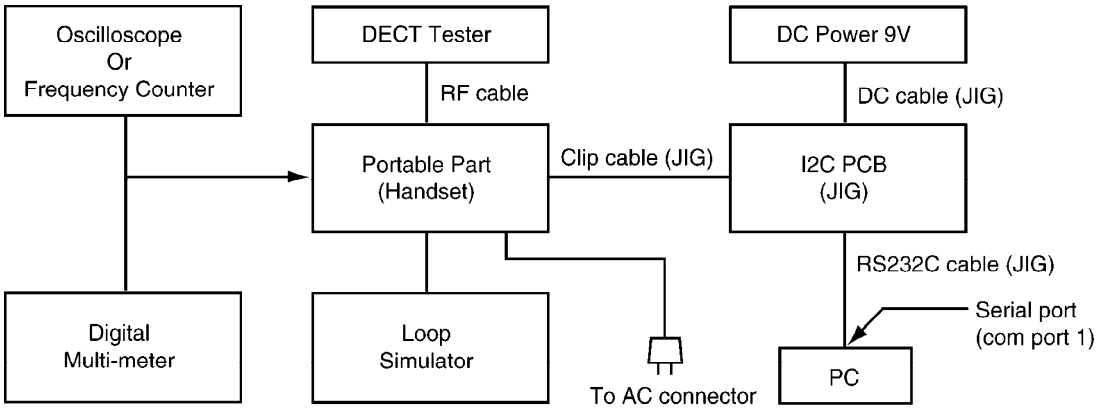
- DC power: it must be able to output at least 1A current under 2.4V for Handset, 9V for JIG.
- Digital multi-meter (DMM): it must be able to measure voltage and current.
- Oscilloscope

13.1.2. JIGs and PC

- EEPROM serial JIGs
  1. I2C PCB: PQZZTCD705BX
  2. RS232C cable: PQZZ1CD705BX
  3. Clip cable: PQZZ2CD705BX
  4. DC cable: PQZZ3CD705BX
- PC which runs in DOS mode.
- Batch file for PC setting: PQZZTCD420E

13.2. PC Setting

13.2.1. Connections



13.2.2. PC Setting

1. Open a window of MS-DOS mode from the start-up menu.
2. Change a directory to the one with “RTX_COM” contained.
3. Type “SET RTX_COM=1” from the keyboard (when COM port 1 is used for the connection).
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Note:
See the table below for frequently used commands.

Command name	Function	Example
rdeeprom	Read the data of EEPROM	Type “rdeeprom 00 00 FF”, and the data from address “00 00” to “FF” is read out.
readid	Read ID (RFPI)	Type “readid”, and the registered ID is read out.
writeid	Write ID (RFPI)	Type “writeid 00 18 E0 0E 98”, and the ID “0018 E0 0E 98” is written.
setfreq	adjust Frequency of RFIC	Type “setfreq nn nn”.
Getchk	Read checksum	Type “getchk”.
Wreeprom	write eeprom	Type "wreeprom 01 23 45". "01 23" is address and "45" is data to be written.

14. ADJUSTMENTS (BASE UNIT AND CHARGER UNIT)

If your unit have below symptoms, adjust or confirm each item using remedy column from the table.

Symptom	Remedy
The base unit does not respond to a call from handset.	Make adjustments in item (A)~(F (I)~(M)
The base unit does not transmit or the transmit frequency is off.	Make adjustments in item (A)~(E (H)~(J), (L)
The transmit frequency is off.	Make confirmation in item (A)~(E (H)~(J), (L)
The transmit power output is low, and the operating distance between base unit and handset is less than normal.	Make confirmation in item (H), (K
The reception sensitivity of base unit is low with noise.	Make confirmation in item (K)
The transmit level is high or low.	Make adjustments in item (O)
The reception level is high or low.	Make adjustments in item (N)
The unit does not link.	Make confirmation in item (A)~(M
The unit cannot charge.	Make confirmation in item (P)

*** : Refer to Adjustment (Base Unit) ()**

14.1. Adjustment (Base Unit)

Please follow the items below when BBIC or EEPROM are replaced.

<table>
<tr><th></th><th>Items</th><th>Adjustment Point</th><th>Procedure*</th><th>Check Repla Parts</th></tr>
<tr><td>(A)</td><td>2.65V Supply Confirmation</td><td>-</td><td>1. Confirm that the voltage between J101 and GND is 2.65V ± 0.2V.</td><td>C40,C41
C43,C44
C32,C33
C37,C</td></tr>
<tr><td>(B)</td><td>4.0V Supply Confirmation</td><td>-</td><td>1. Confirm that the voltage between TP11 and GND is 4.0V ± 0.2V.</td><td>D4,C36,
R61,R62
C72,D14
D9</td></tr>
<tr><td>(C)</td><td>VBACK Status Confirmation</td><td>-</td><td>1. Confirm that the voltage between J102 and GND is 0V ± 0.4V.</td><td>IC8,C53,
C55,C56
R78,R77
R74,D9,
Q12</td></tr>
<tr><td>(D) *</td><td>BBIC Confirmation</td><td>-</td><td>1. BBIC Confirmation (Execute the command "getchk").
2. Confirm the returned checksum value.

Connection of checksum value and program number is shown below.

ex.)<table><tr><th>checksum value</th><th>program number</th></tr><tr><td>354E</td><td>D251ZA</td></tr><tr><td>368E</td><td>D251ZB</td></tr><tr><td>28AC</td><td>D251ZC</td></tr></table></td><td>IC8,C53,
C55,C56
R78</td></tr>
<tr><td>(E) *</td><td>BBIC Clock Adjustment</td><td>TP15</td><td>1. Execute the command "deactmac".
2. Execute the command "conttx".
3. Input Command “rdeeprom_00_00_02”, then you can confirm the current value.
4. Adjust the frequency of TP15 executing the command "setfreq 00 xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 3Hz.</td><td>IC8,C53,
C55,C56
R78,L2,
C95</td></tr>
</table>

	Items	Adjustment Point	Procedure*	Check Repla Parts
(F) *	Hookswitch Check with DC Characteristics	-	1. Connect J2 (Telephone Socket) to Tel-simulator which is connected with 600 Ω. 2. Set line voltage to 48V at on hook condition and line current to 40mA. 3. Execute the command "hookoff" 4. Confirm that the line current is 40mA ± 5mA. 5. Execute the command "hookon". 6. Confirm that the line current is 0mA ± 2mA.	IC8,R12, R14,R15 Q4,D6, C7,C11,J
(G) *	DTMF Generator Confirmation	-	1. Connect J2 (Telephone Socket) to DTMF tester. 2. Execute the command "hookoff" and "dtmf_up". 3. Confirm that the high frequency (1477.06Hz) group is -6.5dBm ~ -9.5dBm. 4. Execute the command "dtmf_lo". 5. Confirm that the low frequency (852.05Hz) group is -9.0dBm ~ -12.0dBm.	IC8,R55, R30,C88 R26,R25 R24,R27 R20
(H) *	Transmitted Power Confirmation	-	Remove the Antenna before starting step from 1 to 4. 1. Configure the DECT tester (CMD60) as follows; <Setting> -Test mode: FP -Traffic Channel: 5 -Traffic Slot: 4 -Mode: Loopback -PMID: 0000 2. Execute the command "testmode". 3. Initiate connection from DECT tester. (“set up connect”) 4. Confirm that the NTP value at ANT is 20dBm ~ 25dBm.	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79,(C66,D10

	Items	Adjustment Point	Procedure*	Check Repla Parts
(I)	Modulatoin Check and Adjustment	ANT	Follow steps 1 to 3 of (H) above. 4. Confirm that the B-Field Modulation is 340kHz/div ~ 402kHz/ div using data type Fig31. 5. Adjust the B-Field Modulation if required. (Execute the command "readmod" and "wrtmod xx", where xx is the value.)	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10
(J)	Frequency Offset Confirmation	-	Follow steps 1 to 3 of (H) above. 4. Confirm that the frequency offset is < ± 40kHz.	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10

	Items	Adjustment Point	Procedure*	Check Replac Parts
(K)	Sensitivity Receiver Confirmation	-	Follow steps 1 to 3 of (H) above. 4. Set DECT tester power to -88dBm. 5. Confirm that the BER is < 1000ppm.	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10
(L)	Timing Confirmation	-	Follow steps 1 to 3 of (H) above. 4. Confirm that the Timing accuracy is < ± 5.0ppm.	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10

	Items	Adjustment Point	Procedure*	Check Repla Parts
(M)*	RSSI Level Confirmation	-	Follow steps 1 to 3 of (H) above. 4. Set DECT tester power to -88dBm. 5. Execute the command "readrssi". 6. Confirm: 29 < returned value < 3E (hex)	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10

	Items	Adjustment Point	Procedure*	Check Replac Parts
(N) *	Receive Audio Check and Adjustment	ANT J2	1. Configure the DECT tester (CMD60) as follows; <Setting> -Test mode: FP -Mode: Normal -PMID: 0000 2. Execute the command "testmode". 3. Initiate connection from DECT tester. 4. Execute the command "hookoff". 5. Execute the command "openau". 6. Connect J2 (Telephone Socket) to Tel-simulator which is connected with 600 Ω. 7. Set line voltage to 48V and line current to 40mA. 8. Connect DECT tester to Tel-simulator. 9. Input audio signal (200mVrms/1kHz tone) to Tel-simulator. <DECT tester setting> -Scramble: On -AF Gen to ADPCM: Off -AF Meter Input: ADPCM -AF Gen Frequency: 1000Hz -AF Gen Level: 200mVrms 10. Confirm hearing tone: 360mVrms ± 60mVrms 11. Adjust audio level if required. (Make sure current value using "getmicgain". And then execute the command "setmicgain xx", where xx is the value.) 12. Confirm that the B-field audio distortion with DECT tester is < 5 %.	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10 R20,C14 R21,R22 R85,C15 R51,C92 C32,Q2, R13,Q4, R15,D6 C7,JM

	Items	Adjustment Point	Procedure*	Check Replac Parts
(O) *	Transmit Audio Check and Adjustment	ANT J2	1. Configure the DECT tester (CMD60) as follows; <Setting> -Test mode: FP -Mode: Normal -PMID: 0000 2. Execute the command "testmode". 3. Initiate connection from DECT tester. 4. Execute the command "hookoff". 5. Execute the command "openau". 6. Connect J2 (Telephone Socket) to Tel-simulator which is connected with 600 Ω. 7. Set line voltage to 48V and line current to 40mA. 8. Input audio signal (30mVrms/1kHz tone) to DECT tester. <DECT tester setting> -Scramble: On -AF Gen to ADPCM: On -AF Meter Input: AF Voltm -AF Gen Frequency: 1000Hz -AF Gen Level: 30mVrms 9. Confirm hearing tone: 300mVrms ± 50mVrms. 10. Adjust audio level if required. (Make sure current value using "getspkrgain". And then execute the command "setspkrgain xx", where xx is the value.) 11. Confirm that the audio distortion at 600R of Tel-simulator is < 5 %.	IC6,IC4 C57,C61 C77,C78 C68,C69 R80,C63 R83,R84 L3,C79, C66,D10 R20,C14 R21,R22 R85,C15 R51,C92 C32,Q2, R13,Q4, R15,D6 C7,JM
(P)	Charging Check	-	1. Connect Charge Contact 12 Ω /2W register between charge+ and charge-. 2. Measure and confirm voltage across the regigster is 2.3V ± 0.2V.	D4,R43,

Note:
After the measuring, sock up the solder of TP.
*** : PC Setting () is required beforehand.**
The connection of adjustment equipment are as shown in Adjustment Standard (Base Unit) ().

14.2. Adjustment Standard (Base Unit)

When connecting the Simulator Equipments for checking, please refer to below.

14.2.1. Component View

Note:
(H) - (O) is refered to ADJUSTMENTS (BASE UNIT AND CHARGER UNIT) ()

14.2.2. Flow Solder Side View

Note:
(A) - (P) is refered to ADJUSTMENTS (BASE UNIT AND CHARGER UNIT) ()

14.3. Adjustment (Charger Unit)

	Items	Adjustment Point	Procedure	Check Repla Parts
(A)	Charging Check	-	1. Connect Charge Contact 12 Ω /2W register between charge+ and charge-. 2. Measure and confirm voltage across the regigster is 2.7V ± 0.2V.	D1,R1,

Note:
After the measuring, sock up the solder of TP.
The connection of adjustment equipment are as shown in Adjustment Standard (Charger Unit) ().

14.4. Adjustment Standard (Charger Unit)

When connecting the Simulator Equipments for checking, please refer to below.

14.4.1. Flow Solder Side View

Note:
(A) is refered to ADJUSTMENTS (BASE UNIT AND CHARGER UNIT) ()

15. ADJUSTMENTS (HANDSET)

If your unit have below symptoms, adjust or confirm each item using remedy column from the table.

Symptom	Remedy
The movement of Battery Low indicator is wrong.	Make confirmation in item (A)~(C (F)~(G)
The handset does not respond to a call from base unit.	Make adjustments in item (A)~(C (H), (J)~(N)
The handset does not transmit or the transmit frequency is off.	Make adjustments in item (A)~(C (H)~(K), (M)
The transmit frequency is off.	Make confirmation in item (A)~(C (H)~(K), (M)
The transmit power output is low, and the operating distance between base unit and handset is less than normal.	Make confirmation in item (I), (L)
The reception sensitivity of base unit is low with noise.	Make confirmation in item (L)
Does not link between base unit and handset.	Make confirmation in item (A)~(C (H)~(N)
The reception level is high or low.	Make adjustments in item (O)
The transmit level is high or low.	Make adjustments in item (P)

*** : Refer to Adjustment ()**

15.1. Adjustment

Please follow the items below when BBIC or EEPROM are replaced.

	Items	Adjustment Point	Procedure*	Check Repla Parts
(A)	4.0V Supply Confirmation	-	1. Confirm that the consumption current is < 200mA , that is, there is no short circuit. 2. Confirm that the voltage between TP14 and GND is 4.1V ± 0.2V.	IC1,F1,F R4,C33 D1,C15 C14,Q1 R2,D2,F C26,X1, C17

<table>
<tr><th></th><th>Items</th><th>Adjustment Point</th><th>Procedure*</th><th>Check Repla Parts</th></tr>
<tr><td>(B)</td><td>VBACK Status Confirmation</td><td>-</td><td>1. Confirm that the voltage between TP18 and GND is 0V ± 0.4V.</td><td>IC1,F1,
R4,C33
D1,C15
C14,Q1
R2,D2,
C26,R16
C16,C</td></tr>
<tr><td>(C)</td><td>BBIC Confirmation</td><td>-</td><td>1. BBIC Confirmation (Execute the command "getchk").
2. Confirm the returned checksum value.

Connection of checksum value and program number is shown below.
ex.)<table><tr><th>checksum value</th><th>program number</th></tr><tr><td>8181</td><td>D241AA</td></tr><tr><td>B794</td><td>D241ZA</td></tr><tr><td>D8C3</td><td>D241ZB</td></tr><tr><td>A00E</td><td>D241ZC</td></tr><tr><td>AA80</td><td>D241ZD</td></tr></table></td><td>IC1,X1,
C17</td></tr>
<tr><td>(D)</td><td>Charge Control Check & Charge Current Monitor Confirmation</td><td>-</td><td>1. Apply 6V between TP5(+) and TP6(-) with current limit of PSU to 200mA.
2. Confirm that the charge current is ON/OFF.
3. SW to decrease current limit of PSU to 100mA.
4. Confirm that the charge current is stable.</td><td>IC1,D4,
L5,Q2,
R6,D2,
C26,F1,
R4,C3</td></tr>
<tr><td>(E)*</td><td>Charge Detection (OFF) Confirmation</td><td>-</td><td>1. Stop supplying 6V to TP5(+) and TP6(-).
2. Execute the command "charge".
3. Confirm that the returned value is 0x00 (hex).</td><td>IC1,D4,
L5,Q2,
R6,D2,
C26,F1,
R4,C3</td></tr>
</table>

	Items	Adjustment Point	Procedure*	Check Replac Parts
(F) *	Battery Monitor Confirmation	-	1. Apply 2.3V ± 0.005V between TP3(+) and TP4(-). 2. Execute the command "readbatt". 3. Confirm: 98 < returned value < A8 (Hex) 4. Execute the command "WRTBAT2 XX". XX: (returned value) - 06 (Hex)	IC1,D4, L5,Q2, R6,D2, C26,F1, R4,C3
(G)	Battery low Confirmation	-	1. Apply 2.40V between TP3(+) and TP4(-). 2. Confirm that there is no Speaker sound (Battery low alarm). 3. Apply 2.20V between TP3(+) and TP4(-). 4. Confirm that there is Speaker sound (Battery low alarm).	IC1,F1, R4,C33, C31,R17 C10,C11 D7
(H) *	BBIC Clock Adjusment	TP19	1. Execute the command "conttx". 2. Adjust the frequency of TP19 executing thecommand "setfreq 00 xx (where xx is the value)" so that the reading of the frequency counter is 10.368000MHz ± 3Hz.	IC1,L3, IC3,X1, C17
(I)*	Transmitted Power Confirmation	TP15	Remove the Antenna before starting step from 1 to 5. 1. Configure the DECT tester(CMD60) as follows; <Setting> -Test mode: PP -RFPI: 0102030405 -Traffic Channel: 5 -Traffic Slot: 4 -Mode: Loopback 2. Execute the command "testmode". 3. Execute the command "regcmd60" 4. Initiate connection from DECT tester. 5. Confirm that the NTP value at A201 (TP15) is 20dBm ~ 25dBm	IC1,IC3, C66,C60 C57,C55 C62,R23 C63,C64 R18
(J)	Modulatoin Check and Adjusment	TP15	Follow steps 1 to 4 of (I) above. 5. Confirm that the B-Field Modulation is 340kHz/div ~ 402kHz/ div using data type Fig31. 6. Adjust the B-Field Modulation if required. (Execute the command "Readmod" and "Writemod xx", where xx is the value.)	IC1,IC3, C66,C60 C57,C55 C62,R23 C63,C64 R18

	Items	Adjustment Point	Procedure*	Check Repla Parts
(K)	Frequency Offset Confirmation	-	Follow steps 1 to 4 of (I) above. 5. Confirm that the frequency offset is < ± 50kHz.	IC1,IC3, C66,C6 C57,C55 C62,R23 C63,C64 R18
(L)	Sensitivity Receiver Confirmation	-	Follow steps 1 to 4 of (I) above. 5. Set DECT tester power to -88dBm. 6. Confirm that the BER is < 1000ppm.	IC1,IC3, C66,C6 C57,C55 C62,R23 C63,C64 R18
(M)	Timing Confirmation	-	Follow steps 1 to 4 of (I) above. 5. Confirm that the Timing accuracy is < ± 10ppm.	IC1,IC3, C66,C6 C57,C55 C62,R23 C63,C64 R18

	Items	Adjustment Point	Procedure*	Check Replac Parts
(N) *	RSSI Level Confirmation	-	Follow steps 1 to 4 of (I) above. 5. Set DECT tester power to -88dBm. 6. Execute the command "readrssi" 7. Confirm that the returned value is 0x34 ± A (hex).	IC1,IC3, C66,C6 C57,C55 C62,R23 C63,C64 R18
(O) *	Receive Audio Check and Confirmation	TP15	1. Configure the DECT tester (CMD60) as follows; <Setting> -Test mode: PP -Mode: Nomal -RFPI: 0102030405 2. Execute the command "testmode". 3. Execute the command "regcmd60" 4. Initiate connection from DECT tester. 5. Execute the command "openaudio". 6. Confirm that the value of EEPROM address "F3F" is "02". (If the value is not "02 (by User)", set "02" and power off and power on, and return to clause 2.) 7. Input audio signal (50mVrms/1kHz tone) from DECT tester. <DECT tester setting> -Scramble: On -AF Gen to ADPCM: On -AF Meter Input: AF Voltm -AF Gen Frequency: 1000Hz -AF Gen Level: 50mVrms 8. Confirm hearing tone: 300mV ± 250mV (Just check Audio path) 9. Confirm that the audio distortion with DECT tester is < 5 %.	IC1,C12, R17,R20 C11,D7 IC3,C54, C60,L3, C55,C56 R23,R24 C64,C65
(P)	Transmit Audio Check and Confirmation	TP15	1. Configure the DECT tester (CMD60) as follows; <Setting> -Test mode: FP -Mode: Normal -RFPI: 0102030405 2. Execute the command "testmode". 3. Execute the command "regcmd60". 4. Initiate connection from DECT tester. 5. Execute the command "openaudio". 6. Confirm that the value of EEPROM address "F3F" is "02". (If the value is not "02 (by User)", set "02" and power off and power on, and return to clause 2.) 7. Input audio signal (30mVrms/1kHz tone) to DECT tester. <DECT tester setting> -Scramble: On -AF Gen to ADPCM: Off -AF Meter Input: ADPCM -AF Gen Frequency: 1000Hz -AF Gen Level: 30mVrms 8. Confirm hearing tone: 300mV ± 250mV (Just check Audio path) 9. Confirm that the audio distortion with DECT tester is < 5 %.	IC1,C8, R8,C6, C5,R5, C4,IC3, C66,C6 C57,C55 C62,R23 C63,C64 R18

Note:

After the measuring, sock up the solder of TP.
*** : PC Setting () is required beforehand.**
The connection of adjustment equipment are as shown in Adjustment Standard (Handset) ().

15.2. Adjustment Standard (Handset)

When connecting the Simulator Equipments for checking, please refer to below.

Note:
(A) - (P) is refered to ADJUSTMENTS (HANDSET) ()

16. RF SPECIFICATION

16.1. Base Unit

Item	Value	Refer to -. *	Remarks
TX Power	More than 20 dBm ~ 25 dBm	Adjustment (Base Unit) (H)	
Modulation	340 kHz/div ~ 402 kHz/ div	Adjustment (Base Unit) (I)	Data type: Fig31
Frequency Offset	-50 kHz ~ +50 kHz	Adjustment (Base Unit) (J)	
RX Sensitivity	< 1000 ppm	Adjustment (Base Unit) (K)	
Timing Accuracy	< ± 5.0 ppm	Adjustment (Base Unit) (L)	
RSSI Level	0x34 hex ± A hex	Adjustment (Base Unit) (M)	

*** : Refer to Adjustment (Base Unit) ()**

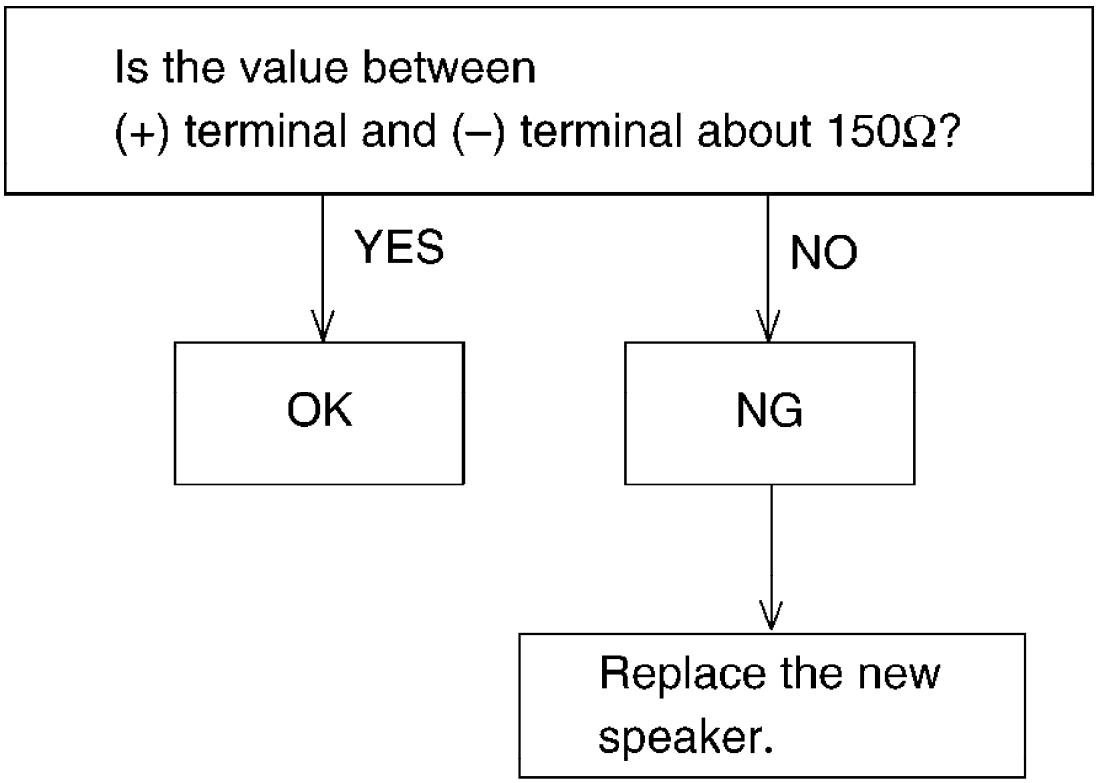
16.2. Handset

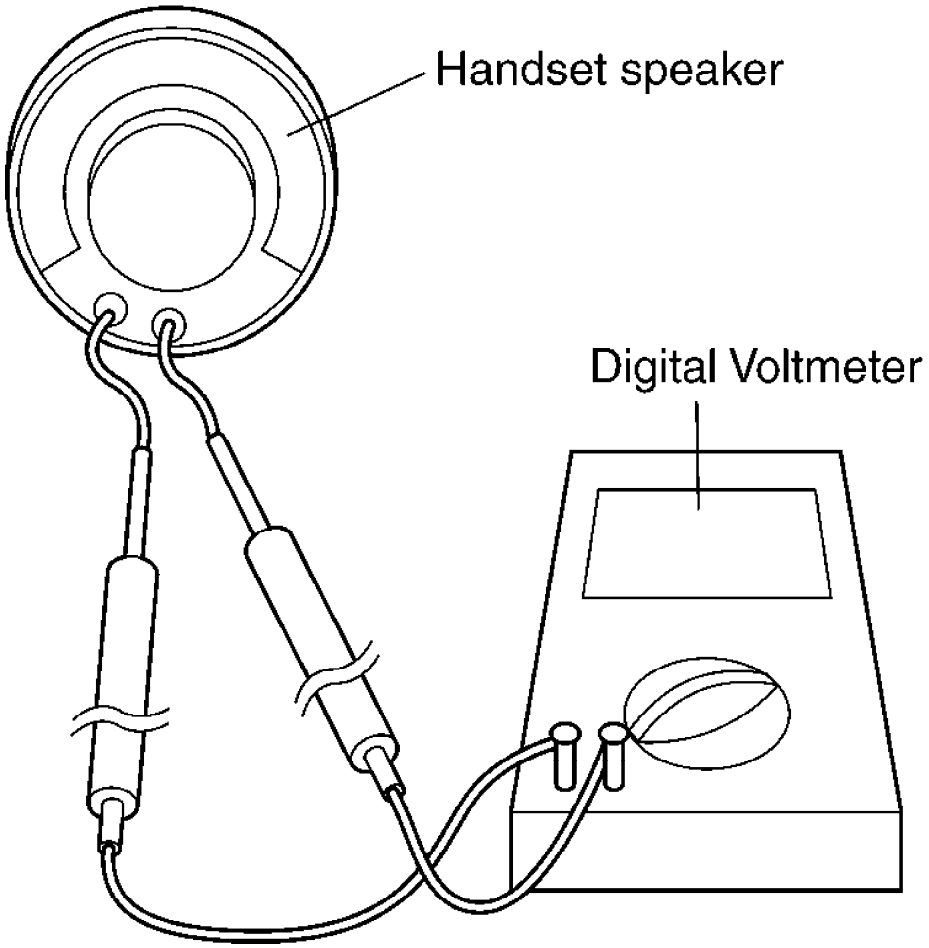
Item	Value	Refer to -. **	Remarks
TX Power	More than 20 dBm ~ 25 dBm	Adjustment (Base Unit) (I)	
Modulation	340 kHz/div ~ 402 kHz/ div	Adjustment (Base Unit) (J)	Data type: Fig31
Frequency Offset	-50 kHz ~ +50 kHz	Adjustment (Base Unit) (K)	
RX Sensitivity	< 1000 ppm	Adjustment (Base Unit) (L)	
Timing Accuracy	< ± 10 ppm	Adjustment (Base Unit) (M)	
RSSI Level	0x34 hex ± A hex	Adjustment (Base Unit) (N)	

**** : Refer to Adjustment ()**

17. HOW TO CHECK THE HANDSET SPEAKER

1. **Prepare the digital voltmeter, and set the selector knob to ohm meter.**
2. **Put the probes at the speaker terminals as shown below.**





18. FREQUENCY TABLE (MHz)

	BASE UNIT		HANDSET	
Channel No	Transmit Frequency	Receive Frequency	Transmit Frequency	Receive Frequen
1	1897.344	1897.344	1897.344	1897.344
2	1895.616	1895.616	1895.616	1895.616
3	1893.888	1893.888	1893.888	1893.888
4	1892.160	1892.160	1892.160	1892.160
5	1890.432	1890.432	1890.432	1890.432
6	1888.704	1888.704	1888.704	1888.704
7	1886.976	1886.976	1886.976	1886.976
8	1885.248	1885.248	1885.248	1885.248
9	1883.520	1883.520	1883.520	1883.520
10	1881.792	1881.792	1881.792	1881.792

Note:
Channel No. 10: In the Test Mode on Base Unit and Handset.

19. BLOCK DIAGRAM (BASE UNIT)

20. CIRCUIT OPERATION (BASE UNIT)

20.1. Outline

Base Unit consists of the following ICs as shown in BLOCK DIAGRAM (BASE UNIT) ().

- DECT BBIC (Base Band IC): IC6
- Handling all the audio, signal and data processing needed in a DECT base unit
- Controlling the DECT specific physical layer and radio section (Burst M odule Controller section)
- ADPCM codec filter for speech encoding and speech decoding (DSP section)
- Echo-cancellation and Echo-suppression (DSP section)
- Any tones (tone, sidetone, ringing tone, etc.) generation (DSP section)
- DTMF receiver (DSP section)
- Clock Generation for RF Module
- ADC, DAC, timer, and power control circuitry
- All interfaces (ex: RF module, EEPROM, LED, Analog Front End, etc.)
- RF Module: IC9
- PLL Oscillator
- Detector
- Compress/Expander
- First/Second Mixer

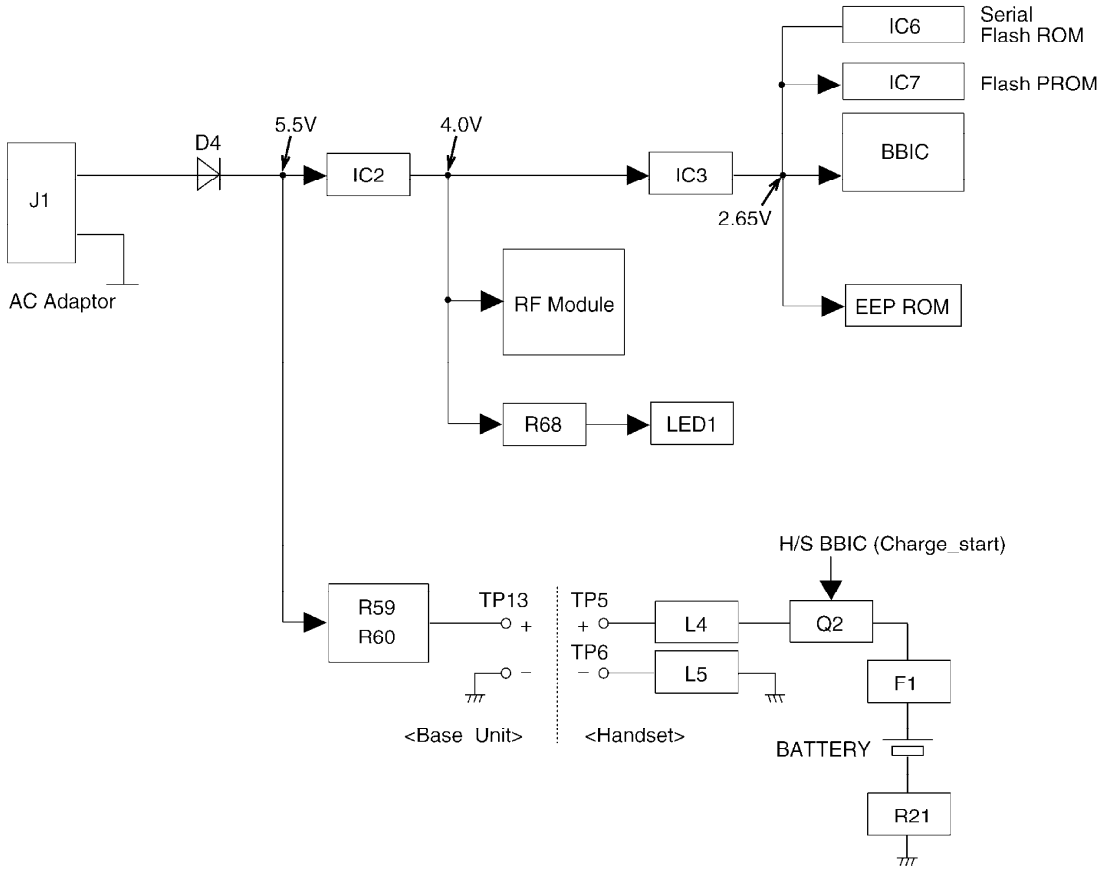
- Amplifier for transmission and reception
- EEPROM: IC4
- Temporary operating parameters (for RF, etc.)
- Flash PROM: IC7
- 2M bit
- Operational Firmware for CPU
- Serial Flash ROM: IC6
- 4M bit
- Audio data for TAM operation
- Additionally,
- Power Supply Circuit (+4.0V, +2.65V output)
- Crystal Circuit (10.368MHz)
- Charge Circuit
- Telephone Line Interface Circuit

20.2. Power Supply Circuit

The power is supplied to the DECT BBIC, RF Module, EEPROM, Relay Coil, LED and Charge Contact from AC Adaptor (+6V) as shown in Fig.101. The power supply is as follows;

- DECT BBIC (IC8): J1(+6V) → D4 → IC2 → IC3 → IC8 → IC6, IC7
- RF Module (IC9): J1(+6V) → D4 → IC2 → IC9
- EEPROM (IC4): J1(+6V) → D4 → IC2 → IC3 → IC4
- LED (LED1): J1(+6V) → D4 → IC2 → R57 → LED1
- Charge Contact (TP13): J1(+6V) → D4 → R59, R60 → TP13

<Fig.101>



20.3. Telephone Line Interface

<Function>

- Bell signal detection
- Clip signal detection
- ON/OFF hook circuit
- Audio circuits

Bell & Clip (: Calling Line Identification Presentation: Caller ID) signal detection:
In the standby mode, Q2 is open to cut the DC loop current and decrease the ring load.
When ring voltage appears at the TP3 (A) and TP40 (B) leads (when the telephone rings), the signal is transferred as follows;

- A → C25 → R40 → R45 → IC5 → C28 → R47 → C29 → R49 → IC8 (136) [CLIP]
- B → C24 → R39 → R44 → IC5 → C28 → R47 → C29 → R49 → IC8 (136) [CLIP]
- A → C2 → IC1 → IC8 (81) [BELL]
- B → D2 → D3 → R1 → IC1 → IC8 (81) [BELIL]

ON/OFF hook circuit:
In the standby mode, Q2 is open, and connected as to cut the DC loop current and to cut the voice

signal. The unit is consequently in an off-hook condition.
When IC8 detects a ring signal or press the TALK Key onto the handset, Q4 turns on and then Q2 turns on, thus providing an off-hook condition (active DC current flow through the circuit) and the following signal flow is for the loop current.

- A → JMP9 → D6 → Q2 → R13 → Q4 → D6 → B [OFF HOOK]

20.4. Transmitter/Receiver

Base Unit and Handset mainly consist of RF Module and DECT BBIC.
Base Unit and Handset transmit/receive voice signal and data signal through the antenna on carrier frequency.

Signal Pass:
***Refer to SIGNAL ROUTE ().**

20.4.1. Transmitter Block

The voice signal input from the TEL LINE interface goes to RF Module (IC9) through DECT BBIC (IC8) as shown in BLOCK DIAGRAM (BASE UNIT) ()
The voice signal passes through the analog part of IC8 where it is amplified and converted to a digital audio stream signal. The burst switch controller processes this stream performing encryption and scrambling, adding the various other fields to produce the GAP (Generic Access Profile) standard DECT frame, assigning to a time slot and channel etc.
In IC3, the carrier frequency is changing, and frequency modulated RF signal is generated and amplified, and radiated from antenna. Handset detects the voice signal or data signal in the circuit same as the following explanation of Receiver Block.

20.4.2. Receiver Block

The signal of 1.152 MHz band (1.881792 MHz ~ 1.897344 MHz) which is input from antenna is input to IC9 as shown in BLOCK DIAGRAM (BASE UNIT) ().
In IC3, the signal of 1.152 MHz band is downconverted to 864 kHz signal and demoduleted, and goes to IC2 as GAP (Generic Access Profile) standard DECT frames. It passes through the decoding section burst switch controller where it separates out the frame information and performs de-encryption and de-scrambling as required. It then goes to the DSP section where it is turned back into analog audio. This is amplified by the analog front end, and goes to the TEL LINE Interface.

21. BLOCK DIAGRAM (HANDSET)

22. CIRCUIT OPERATION (HANDSET)

22.1. Outline

Handset consists of the following ICs as shown in BLOCK DIAGRAM (HANDSET) ().

- DECT BBIC (Base Band IC): IC1

- All data signals (forming/analyzing ACK or CMD signal)
- All interfaces (ex: Key, Detector Circuit, Charge, DC/DC Converter, EEPROM, LCD)
- RF Module: IC3
- PLL Oscillator
- Detector
- Compress/Expander
- Amplifier for transmission and reception

22.2. Power Supply Circuit/Reset Circuit

Circuit Operation:
When power on the Handset, the voltage is as follows;
BATTERY(2.2 V ~ 2.6V: TP3) → TP14(4V) → IC3(6, 27), D3 → IC1(37) → IC1(39, 63) (2.65V)
The Reset signal generates R19, C23 and 2.65V.

22.3. Charge Circuit

Circuit Operation:

- When charging the handset on the Base Unit, the charge current is as follows;
  DC+(5.5V ~ 6V) → D4 → R43, R44 → CHARGE+(Base) → CHARGE+(Handset) → L4 → Q2 → F1 → BATTERY+ ... Battery ... BATTERY- → R21 → GND → L5 → CHARGE-(Handset) → CHARGE-(Base) → GND → DC-(GND)
- When charging the handset on the Charger Unit, the charge current is as follows;
  DC+(5.5V ~ 6V) → D1 → R1, R2 → CHARGE+(Charger Unit) → CHARGE+(Handset) → F1 → BATTERY+ ... Battery ... BATTERY- → R21 → GND → CHARGE-(Handset) → CHARGE-(Charger Unit) → GND → DC-(GND)

In this way, the BBIC on Handset detects the fact that the battery is charged.
The charge current is controlled by switching Q2 of Handset.
Refer to Fig.101 in Power Supply Circuit ().

22.4. Battery Low/Power Down Detector

Circuit Operation:
"Battery Low" and "Power Down" are detected by BBIC which check the voltage from battery.
The detected voltage is as follows;

- Battery Low
  Battery voltage: V(Batt) < 2.3V

The BBIC detects this level and " " starts flashing and "battery alarm" starts ringing.

- Power Down

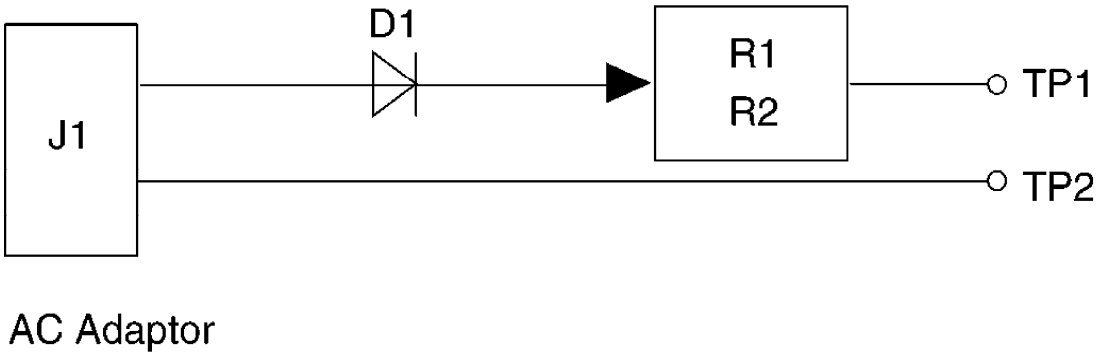
Battery voltage: V(Batt) < 2.2V

The BBIC detects this level and power down.

23. CIRCUIT OPERATION (CHARGER UNIT)

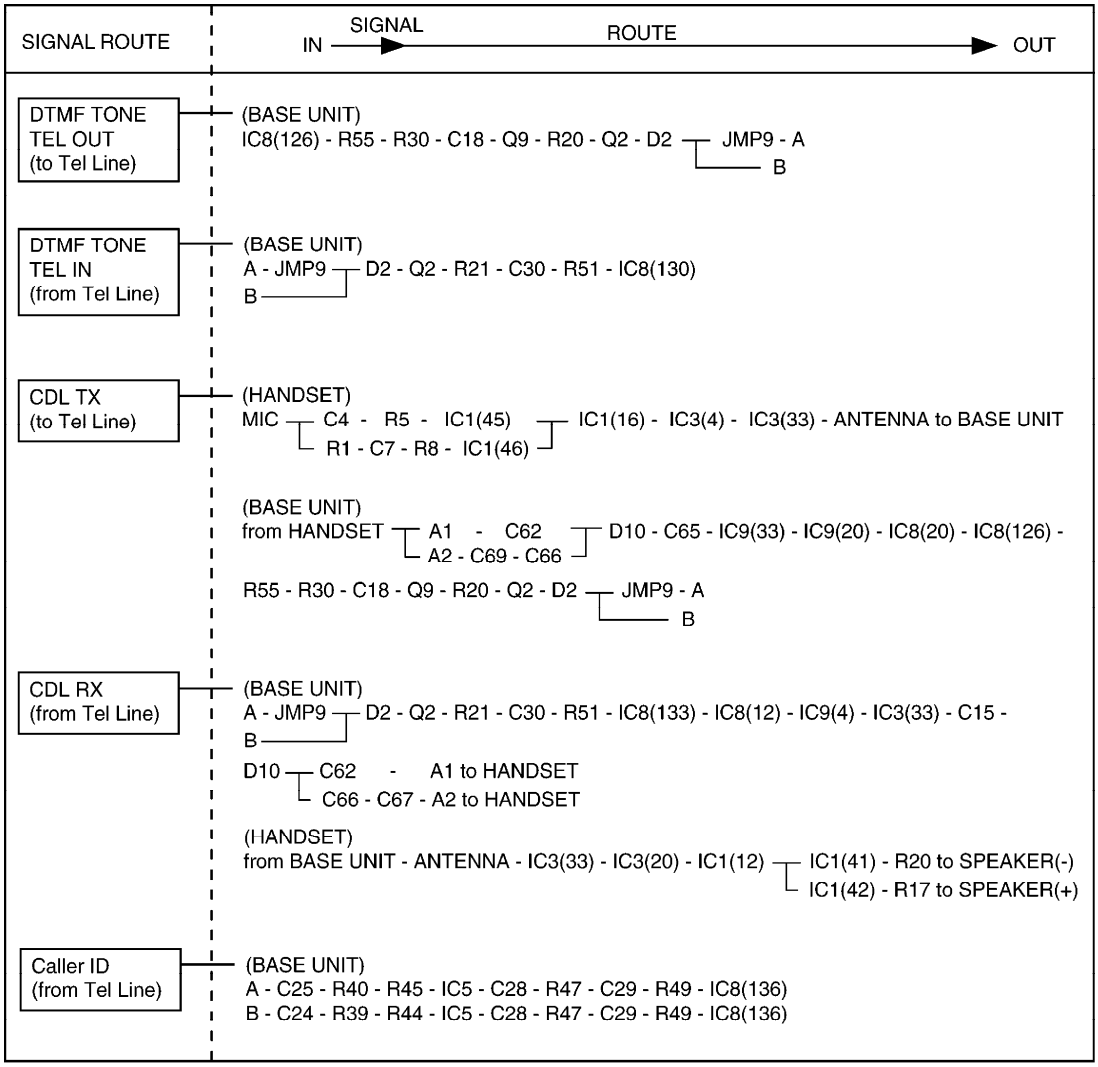
23.1. Power Supply Circuit

The power supply is as shown.



AC Adaptor

24. SIGNAL ROUTE


SIGNAL ROUTE
SIGNAL
IN
ROUTE
OUT
DTMF TONE
TEL OUT
(to Tel Line)
(BASE UNIT)
IC8(126) - R55 - R30 - C18 - Q9 - R20 - Q2 - D2 - JMP9 - A
B
DTMF TONE
TEL IN
(from Tel Line)
(BASE UNIT)
A - JMP9 - D2 - Q2 - R21 - C30 - R51 - IC8(130)
B
CDL TX
(to Tel Line)
(HANDSET)
MIC - C4 - R5 - IC1(45) - IC1(16) - IC3(4) - IC3(33) - ANTENNA to BASE UNIT
R1 - C7 - R8 - IC1(46)
(BASE UNIT)
from HANDSET - A1 - C62 - D10 - C65 - IC9(33) - IC9(20) - IC8(20) - IC8(126) -
A2 - C69 - C66
R55 - R30 - C18 - Q9 - R20 - Q2 - D2 - JMP9 - A
B
CDL RX
(from Tel Line)
(BASE UNIT)
A - JMP9 - D2 - Q2 - R21 - C30 - R51 - IC8(133) - IC8(12) - IC9(4) - IC3(33) - C15 -
B
D10 - C62 - A1 to HANDSET
C66 - C67 - A2 to HANDSET
(HANDSET)
from BASE UNIT - ANTENNA - IC3(33) - IC3(20) - IC1(12) - IC1(41) - R20 to SPEAKER(-)
IC1(42) - R17 to SPEAKER(+)
Caller ID
(from Tel Line)
(BASE UNIT)
A - C25 - R40 - R45 - IC5 - C28 - R47 - C29 - R49 - IC8(136)
B - C24 - R39 - R44 - IC5 - C28 - R47 - C29 - R49 - IC8(136)

25. CPU DATA (BASE UNIT)

25.1. IC8 (BBIC)

Pin	Descriptiojn	I/O	Hi	Hi-z	Low	Remarks
1	VSS	-	-	-	-	
2	DM1	DI	-	-	-	for Down Load
3	DM2	DI	-	-	-	for Down Load
4	DM3	DI	-	-	-	for Down Load
5	SYRI	DO	Active	-	Active	-
6	VSSO	A	-	-	-	-
7	XTAL	A	-	-	-	X'tal
8	LOAD	A	-	-	-	X'tal
9	VDDREG	DO	-	-	-	-
10	RXDSG	DO	Active	-	Active	-
11	VDDTXDA	DI	-	-	-	
12	TXDA	A	Active	-	Active	-
13	VDD	-	-	-	-	-
14	VSS	-	-	-	-	-
15	(NO USE)	DO	-	-	-	-
16	DAON	DO	PA-ON	-	PA-OFF	-
17	SYCL	D0	Active	-	Active	-
18	SYEN	DO	Normal	-	Latch	-
19	SYDA	DI	Active	-	Active	-
20	RXDA	A	Active	-	Active	-
21	RXDB	A	-	-	-	-
22	ANT1	DO	ANT1 ON	-	ANT1 OFF	-
23	VDD	-	-	-	-	-
24	VSS	-	-	-	-	-
25	ANT2	DO	ANT2 ON	-	ANT2 OFF	-
26	I2CLK	DO	Active	-	Active	-
27	I2DAT	DI/O	Data	-	Data	-
28	VSS	-	-	-	-	-
29	CSROQ	DO	-	-	Read IC7	for Flash Memory
30	BSCL0	DO	-	-	-	for Flash Memory
31	BSCL1	DO	-	-	-	for Flash Memory
32	A0	DO	-	-	-	for Flash Memory
33	A1	DO	-	-	-	for Flash Memory
34	VDD	-	-	-	-	-
35	VSS	-	-	-	-	-
36	A2	DO	-	-	-	for Flash Memory
37	A3	DO	-	-	-	for Flash Memory
38	A4	DO	-	-	-	for Flash Memory
39	A5	DO	-	-	-	for Flash

						Memory

Pin	Descriptiojn	I/O	Hi	Hi-z	Low	Remarks
40	A6	DO	-	-	-	for Flash Memory
41	A7	DO	-	-	-	for Flash Memory
42	A8	DO	-	-	-	for Flash Memory
43	A9	DO	-	-	-	for Flash Memory
44	A10	DO	-	-	-	for Flash Memory
45	VSS	-	-	-	-	-
46	VDD	-	-	-	-	-
47	A11	DO	-	-	-	for Flash Memory
48	A12	DO	-	-	-	for Flash Memory
49	A13	DO	-	-	-	for Flash Memory
50	A14	DO	-	-	-	for Flash Memory
51	A15	DO	-	-	-	for Flash Memory
52	D0	DO/I	-	-	-	for Flash Memory
53	D1	DO/I	-	-	-	for Flash Memory
54	D2	DO/I	-	-	-	for Flash Memory
55	VDD	-	-	-	-	-
56	VSS	-	-	-	-	-
57	D3	DO/I	-	-	-	for Flash Memory
58	D4	DO/I	-	-	-	for Flash Memory
59	D5	DO/I	-	-	-	for Flash Memory
60	D6	DO/I	-	-	-	for Flash Memory
61	D7	DI/O	-	-	-	for Flash Memory
62	P0.7	DO	-	-	-	-
63	P0.6	DO	Make		Break	-
64	(NO USE)	DO	-	-	-	-
65	(NO USE)	DO	-	-	-	-
66	VDD	-	-	-	-	-
67	VSS	-	-	-	-	-
68	P0.3	DO	-	-	-	-
69	P0.2	DO	-	-	-	-

Pin	Descriptiojn	I/O	Hi	Hi-z	Low	Remarks
70	P0.1	DO	-	-	-	for Flash Memory
71	P0.0	DO	No Key	-	Key	for Key
72	PX.2	DO	-	-	Write IC4	for Flash Memory
73	PX.1	DO	-	-	Read IC4	for Flash Memory
74	(NO USE)	DO	-	-	-	-
75	(NO USE)	DO	-	-	-	-
76	R1	DO	LED ON	-	LED OFF	-
77	(NO USE)	DO	-	-	-	-
78	VDD	-	-	-	-	-
79	VSS	-	-	-	-	-
80	(NO USE)	DO	-	-	-	-
81	TONE	DI	-	-	-	Ring Det
82	(NO USE)	DO	-	-	-	-
83	(NO USE)	DO	-	-	-	-
84	(NO USE)	DO	-	-	-	-
85	(NO USE)	DO	-	-	-	-
86	(NO USE)	DO	-	-	-	-
87	(NO USE)	DO	-	-	-	-
88	VDD	-	-	-	-	-
89	VSS	-	-	-	-	-
90	(NO USE)	DO	-	-	-	-
91	(NO USE)	DO	-	-	-	-
92	(NO USE)	DO	-	-	-	-
93	(NO USE)	DO	-	-	-	-
94	(NO USE)	DO	-	-	-	-
95	MA5	DO/I	-	-	-	for Voice Down Load
96	(NO USE)	DO	-	-	-	-
97	MA3	DO/I	-	-	-	for Voice Down Load
98	VDD	-	-	-	-	-
99	VSS	-	-	-	-	-
100	MA2	DO/I	-	-	-	for Voice Down Load
101	MA1	DO/I	-	-	-	for Voice Down Load
102	MA0	DO/I	-	-	-	for Voice Down Load
103	FRDY	DO	-	-	-	for Flash Memory
104	MD4	DO	-	-	-	for Flash Memory
105	MD2	DO	-	-	-	for Flash Memory

Pin	Descriptiojn	I/O	Hi	Hi-z	Low	Remarks
106	MD1	DI	-	-	-	for Flash Memory
107	MD0	DO	-	-	-	for Flash Memory
108	VDD	-	-	-	-	-
109	VSS	-	-	-	-	-
110	(NO USE)	A	-	-	-	-
111	(NO USE)	A	-	-	-	-
112	(NO USE)	A	-	-	-	-
113	(NO USE)	A	-	-	-	-
114	(NO USE)	A	-	-	-	-
115	(NO USE)	A	-	-	-	-
116	VSSA	-	-	-	-	-
117	VDDA	-	-	-	-	-
118	(NO USE)	A	-	-	-	-
119	(NO USE)	AI	-	-	-	-
120	(NO USE)	AI	-	-	-	-
121	(NO USE)	A	-	-	-	-
122	(NO USE)	A	-	-	-	-
123	SON	A	-	-	-	-
124	(NO USE)	A	-	-	-	-
125	(NO USE)	A	-	-	-	-
126	HOP	A	-	-	-	-
127	HOPI	A	-	-	-	-
128	(NO USE)	A	-	-	-	-
129	REFVH	A	-	-	-	-
130	BREF	A	-	-	-	-
131	VSSA	-	-	-	-	-
132	VDDA	-	-	-	-	-
133	MIP	A	-	-	-	-
134	MFBN	A	-	-	-	-
135	MFBP	A	-	-	-	-
136	MIN	A	-	-	-	-
137	ADREFP	A	-	-	-	-
138	ADREFN	A	-	-	-	-
139	RSSI	A	-	-	-	-
140	AD3	A	-	-	-	-
141	AD4	A	-	-	-	-
142	MPCINP	A	-	-	-	-
143	RESETQ	A	Normal	-	Reset	-
144	VDD	-	-	-	-	-

Note:
I_PU; Internal Pull-Up, I_PD; Internal Pull-Down

26. CPU DATA (HANDSET)

26.1. IC1 (BBIC)

Pin	Description	I/O	Hi	Hi-z	Remarks
1	LCD_SEGMENT	D.O	Active	-	-
2	LCD_COMMON	D.O	Active	-	-
3	VDD	-	-	-	-
4	VSS	-	-	-	-
5	LCD_COMMON	D.O	Active	-	-
6	LCD_COMMON	D.O	Active	-	-
7	LCD_COMMON	D.O	Active	-	-
8	LCD_COMMON	D.O	Active	-	-
9	LCD_COMMON	D.O	Active	-	-
10	PA_SW	D.O	PA ON	-	-
11	T/R SW	D.O	Transmit	-	-
12	RX_DATA	D.I	Active	-	-
13	SYEN	D.O	Active	-	-
14	SYDA	D.O	Active	-	-
15	SYCL	D.O	Active	-	-
16	TX_DATA	A.O	Active	-	-
17	KEY_IN	D.I	No Key	-	-
18	KEY_IN	D.I	No Key	-	-
19	KEY_IN	D.I	No Key	-	-
20	KEY_IN	D.I	No Key	-	-
21	KEY_IN	D.I	No Key	-	-
22	(NO USE)	D.O	-	-	-
23	Reference clock	D.O	Active	-	-
24	VDD	-	-	-	-
25	VSS	-	-	-	-
26	POWER_SW	A.I	No Key	-	-
27	CHARGE_DET	A.I	Charge	-	-
28	DCDCDRV	D.O	Active	-	-
29	DCDCCMR	A.I	-	-	-
30	RESET	A.I	Normal	-	-
31	VSSO	-	-	-	-
32	LOAD	A.I	-	-	-
33	XTAL	A.I	-	-	-
34	VDDPM	A.O	-	-	-
35	VDDLO	A.O	-	-	-
36	VDDBAT	A.I	-	-	-
37	VDDLR	-	-	-	-
38	CHARGE_START	A.O	-	-	for charge
39	VDDA	-	-	-	-
40	VSSA	-	-	-	-
41	LSRN	A.O	-	-	-

Pin	Description	I/O	Hi	Hi-z	Remarks
42	LSRP	A.O	-	-	-
43	BANDGAP_REF	A.O	-	-	-
44	MICS	A.O	-	-	-
45	MICP	A.I	-	-	-
46	MICN	A.I	-	-	-
47	Reference Voltage	A.O	-	-	-
48	RSSI	A.I	-	-	-
49	P0.4	D.I	-	-	-
50	AD4N	A.I	-	-	-
51	AD4P	A.I	-	-	-
52	(NO USE)	D.I	-	-	-
53	KEY_STRB	D.O	Active	-	-
54	KEY_STRB	D.O	Active	-	-
55	KEY_STRB	D.O	Active	-	-
56	LCD_SEGMENT	D.O	Active	-	-
57	LCD_SEGMENT	D.O	Active	-	-
58	LCD_SEGMENT	D.O	Active	-	-
59	KEY_STRB	D.O	Active	-	-
60	KEY_STRB	D.O	Active	-	-
61	LCD_SEGMENT	D.O	Active	-	-
62	LCD_SEGMENT	D.O	Active	-	-
63	VDD	-	-	-	-
64	VSS	-	-	-	-
65	VDD for EEPROM	D.O	-	-	-
66	I2DAT	D.I/O	Active	-	-
67	I2CLK	D.I/O	Active	-	-
68	MODE	D.I	-	-	-
69	R2	D.I	-	-	-
70	(NO USE)	D.O	-	-	-
71	VBACK/P0.7	D.I	-	-	-
72	LCD_SEGMENT	D.O	Active	-	-
73	LCD_SEGMENT	D.O	Active	-	-
74	LCD_SEGMENT	D.O	Active	-	-
75	LCD_SEGMENT	D.O	Active	-	-
76	LCD_SEGMENT	D.O	Active	-	-
77	VDDLI	-	-	-	-
78	LCD_SEGMENT	D.O	Active	-	-
79	LCD_SEGMENT	D.O	Active	-	-
80	LCD_SEGMENT	D.O	Active	-	-
81	LCD_SEGMENT	D.O	Active	-	-
82	LCD_SEGMENT	D.O	Active	-	-
83	LCD_SEGMENT	D.O	Active	-	-
84	LCD_SEGMENT	D.O	Active	-	-
85	VSS	-	-	-	-
86	VDD	-	-	-	-

Pin	Description	I/O	Hi	Hi-z	Remarks
87	LCD_SEGMENT	D.O	Active	-	-
88	(NO USE)	D.O		-	-
89	Power Select	D.O	Low Power	-	-
90	LCD_SEGMENT	D.O	Active	-	-
91	LCD_SEGMENT	D.O	Active	-	-
92	LCD_SEGMENT	D.O	Active	-	-
93	LCD_SEGMENT	D.O	Active	-	-
94	LCD_SEGMENT	D.O	Active	-	-
95	LCD_SEGMENT	D.O	Active	-	-
96	LCD_SEGMENT	D.O	Active	-	-
97	LCD_SEGMENT	D.O	Active	-	-
98	LCD_SEGMENT	D.O	Active	-	-
99	LCD_SEGMENT	D.O	Active	-	-
100	LCD_SEGMENT	D.O	Active	-	-

27. EEPROM LAYOUT (BASE UNIT)

27.1. Scope

The purpose of this section is to describe the layout of the EEPROM (IC1) for the KX-TCD420 Base Unit.
The EEPROM contains hardware, software, and user specific parameters. Some parameters are set during production of the base e.g. crystal frequency adjustment at address 0000 and 0001, some are set by the user configuration e.g. ringer volume at address 0220, and some are set during normal use of the phone e.g. meter pulse billing at address 0140..015F.

27.2. Introduction

The base unit uses a 32K bit serial EEPROM (IC1) for storing volatile parameters. All parameters are set up before the base leaves the factory. Some of these are vital for the operation of the hardware so a set of default parameters is programmed before the actual hardware fine-tuning can be initiated. This document lists all default settings with a short description.
In the tables below values in a range that are similar are not repeated; i.e. Address 00 to 01 contains the value 00 simply means that the value 00 is repeated in all addresses in the range. All values in this document are in hexadecimal notation.

Type	Name	Description
D	default	The EEPROM location is preset to the Default value by the eeprom default loade
A	adjust	The EEPROM location is set during the production test and should not be overwritten. The value is set by the eeprom default loader only if the location contains all 1's (byte: 0xFF, word FFFFh), i, e. it has never been set.
-		EEPROM location which is not set at all.
d	default	Same as D but best-guess value and/or not verified.

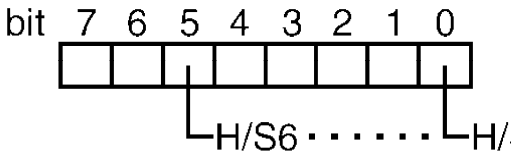
Country Setting	x	Default - no specific country setting, so revert to default value

27.3. EEPROM Layout

27.3.1. General Setup

Address	Default	Name	Country Setting	Type	Description
0000-01	00 E0	EepromOscillator	x	A	Frequency adjustment
0002	20	ModulationDeviation	x	A	Modulation adjustment
0020	-	RFPI (ID for Base Unit)	x	A	RFPI
0025	00 00	AC (Base PIN code)	x	D	AC code
0028	00	TBR22Test	x	-	TBR22 test
0030-0034	FF .. FF	IPUI_1 (ID for H/S 1)	x	D	Ipui for handset 1. If set to FF .. FF (5bytes) the handset is not enrolled.
0035-0039	FF .. FF	IPUI_2 (ID for H/S 2)	x	D	Ipui for handset 2. If set to FF .. FF (5bytes) the handset is not enrolled.
003A-003E	FF .. FF	IPUI_3 (ID for H/S 3)	x	D	Ipui for handset 3. If set to FF .. FF (5bytes) the handset is not enrolled.
003F-0043	FF .. FF	IPUI_4 (ID for H/S 4)	x	D	Ipui for handset 4. If set to FF .. FF (5bytes) the handset is not enrolled.
0044-0048	FF .. FF	IPUI_5 (ID for H/S 5)	x	D	Ipui for handset 5. If set to FF .. FF (5bytes) the handset is not enrolled.
0049-004D	FF .. FF	IPUI_6 (ID for H/S 6)	x	D	Ipui for handset 6. If set to FF .. FF (5bytes) the handset is not enrolled.
004E-008F	-	Reserved	x	-	Protocol data
0090-009F	-	UAK_1	x	-	UAK for hanset 1 (for factory use)
00A0-00AF	-	UAK_2	x	-	UAK for hanset 2 (for factory use)
00B0-00BF	-	UAK_3	x	-	UAK for hanset 3 (for factory use)
00C0-00CF	-	UAK_4	x	-	UAK for hanset 4 (for factory use)
00D0-00DF	-	UAK_5	x	-	UAK for hanset 5 (for factory use)
00E0-00EF	-	UAK_6	x	-	UAK for hanset 6 (for factory use)

27.3.2. Switch Control

Address	Default	Name	Country Setting	Type	Description
09F1	00	HsRegInfo.RegFlags	x	D	Handset registration info - registration O OFF  1=reg, 0=no reg
09F2	00	HsRegInfo.EmcFlags	x	D	Handset registration info - EMC flags Bit 6..7: not used 0..5: handset 1..6 info, 1=known , 0= unknown
09F3	21	RingMode	x	D	Ring mode. Modes used in KAMMA4 are 20h and 21h. Bit 7..5: Mode (001=group) 4 : Not used 3..0: Id (001= id of first group)

27.3.3. Flash Time setting

Address	Default	Name	Country Setting	Type	Description
0F0B	08	CalibBreakTime[0]	x	D	Calibrated loop-break time for short break Unit: 10 ms, defaultst to 80 ms
0F0C	14	CalibBreakTime[1]	x	D	Calibrated loop-break time for short break Unit: 10 ms, defaultst to 200 ms
0F0D	46	CalibBreakTime[2]	x	D	Calibrated loop-break time for short break Unit: 10 ms, defaultst to 700 ms

27.3.4. Clip (Caller ID) configuration

Address	Default	Name	Country Setting	Type	Description
0F1C	70	Detect	x	D	CLIP detect configuration Bit 0-2: Mode: 0: Learn mode, 1: DTMF only, 3: Generic mod, 4: Russian CL only 3: Unused4 4: Onhook: 1=enable 0=disable 5: Offhookk: 1=enable 0=disable 6: Msgwaiting: 1=enable 0=disable 7: Unused7
0F37..38	3D 01	Parse.Configuration	3D 00	D	Clip parse set configuration Bit 0: Etsi: 1=enable 0=disable 1: ForwardNumber: 1=enable 0=disa 2: Danish: 1=enable 0=disable 3: Dutch: 1=enable 0=disable 4: Canadian: 1=enable 0=disable 5: Swedish: 1=enable 0=disable 6: UserDefined: 1=enable 0=disable 7: KPN vmwi: 1=enable 0=disable 8: ProtocolPriority: If 2 mutual exclusive parameters occurs, the 1st in the protocol message has priority. 9: UseCallType: Verify the Call Type parameter, if available, when receiving Call Back CLIP at busy subscriber. 1=enable 0=disable 10..15: Reserved10..Reserved15

27.3.5. TADTASK

Address	Default	Name	Country Setting	Type	Description
0F40	00	CountryCode	x	D	Country code 0: Germany 1: Greece 2: Turkey 3: England 4: Switzerland 5: Poland 7: France 8: Denmark A: Italy C: Czech E: Hungary F: Spain 14: Russia
0F41-0F60	FF	TamTagInfo	x	A	Message TAG information Bit 0-3 Odd number MSG, 4-7 Even number MSG 0: Reserve 1: 2WayInfo 0:Not 2WayRec/1: 2WayRecMsg 2: New Info 0:OLD/1:NEW 3: OGM Info Not used 4: Reserve 5: 2WayInfo 0:Not 2WayRec/1: 2WayRecMsg 6: ARSMultipleCarrierMenuEnabled, enabled 7: OGM Info Not used
0F61	14	TamPrgRings	x	A	TAM Current Setting data Bit 0: Answer ON/OFF 0:OFF/1:ON 1: ICM Record Time Mode1 0:OFF/1: Greeting Only 2: ICM Record Time Mode2 0:OFF/1: Unlimited Mode1=0&Mode2=0:ICM Record Time 1min 3: CPC time selection 0:time A/1:time 4: Greeting Monitor mode ON/OFF 0:O /1:ON 5: Reserve 6: VOX sense selection 0: Normal /1: Low 7: DSC time selection 0: immediately/ 1.6sec

Address	Default	Name	Country Setting	Type	Description
0F62	00	TamPrgRings	x	A	Current number of rings for automati answering Range:0(Auto), 2-7
0F63-0F64	FF	TamPrgRmtCode	x	A	Current Remote code e.g. 123 Address 0x0F63 0xF1 Addres 0x0F64 0x23
0F65	10	CountryData	x	D	Each country data Bit 0: Reserve 1: Reserve 2: Max time in Line Remote Not Used 3: TimeData for voice prompt 0:24hou :12hour 4: VicMenuData 0: No VoiceMenu/1: VoiceMenu 5: LanguageInfo 0: Single Language/1 Dual Languages 6: Reserve 7: Reserve
0F66	08	DetData	x	D	Detection data Bit 0: Selection CPC A/B 0:OFF (A fixed)/ ON(Select) 1: Reserve 2: Detect 1st Short Bell (300ms) for count 3: Cyclic Detection of VOX 0: OFF/1: ON(Detect) 4: Detection of DSC 0: OFF/1: ON(Det 5: Reserve 6: Reserve 7: Reserve
0F67	06	OptionData	26	D	Each country data Bit 0: 2 Way Beep ON/OFF 0:OFF/1:ON 1: 2 Way Beep interval 0:15s per 400m :20s per 160ms 2: 2 Way Rec ON/OFF 0:OFF/1:ON 3: Switching of VOX Sense ON/OFF 0: OFF/1:ON 4: Key Click Tone ON/OFF Not used 5: Select Compression Rate Menu 0:N Active/ 1:Active 6: Reserve 7: Reserve

Address	Default	Name	Country Setting	Type	Description
0F68	00	TamPrgWordMode	x	D	Language select data For Switzerland 0:Germany/1:French For Czech 0:Chezh/1:Slovakian
0F69	27	TamRingsSetNum	x	D	Number of rings select range for automatic answering 0x25: 2 ~ 5 Rings 0x27: 2 ~ 7 Rings
0F6A	00	TamRingsDefNum	x	D	Number of rings default data 0: Default is Automatically Turn on fo Toll saver 2-7: Default of the number of rings for Turn on.

27.3.6. BsUiTask settings

Address	Default	Name	Country Setting	Type	Description
0F6E	01	Config1	x	D	BsUiTask configuration (MSB) Bits 1=enable 0=disable 0: AmPmClockSettingEnabled, enable 1: ClipDetectionSettingEnabled, disab 2: AkzMenuEnabled, disabled 3: HakzMenuEnabled, disabled 4: RussianClipSttingEnabled, disable 5: SmscSendNumberSettingEnabled, disabled 6-7: Unused
0F6F	F7	Config2	D7	D	BsUiTask configuration (LSB) Bits 1=enable 0=disable 0: FlashTime1Enabled, enabled 1: FlashTime2Enabled, enabled 2: FlashTime3Enabled, enabled 3: KeyClicksEnable, enabled 4: ARSCarrierMenuEnabled, enabled 5: ARSIntDeletionMenuEnabled, enab 6: ARSMultipleCarrierMenuEnabled, enabled 7: ARSMultipleAreaCodeMenuEnable enabled

28. EEPROM LAYOUT (HANDSET)

28.1. Scope

The purpose of this section is to describe “layout of the EEPROM (IC2) KX-A142 Handset”.

The EEPROM contains hardware, software, and user specific parameters. Some parameters are set during production of the handset e.g. crystal oscillator adjustment at 0000..01, some are set by the user when configuring the handset e.g. ringer volume at 0F38, and some during normal use of the phone e.g. redial memory at 0311..0392.

28.2. Introduction

The handset uses a 32k bit serial EEPROM (IC2) for storing volatile parameters. All parameters are set up before the handset the factory. Some of these are vital for the operation of the hardware so a set of default parameters is programmed before the actual hardware fine-tuning can be initiated. This document lists all default settings with a short description.
This document lists all default parameters with a short description.
In the tables below values in a range that are similar are not repeated; i.e. Address 00 to 01 contains the value 00 simply means that the value 00 is repeated in all addresses in the range.

Type	Name	Description
D	default	The EEPROM location is preset to the Default value by the eeprom default loader.
A	adjust	The EEPROM location is set during the production test and should not be overwritten. The value is set by the eeprom default loader only if the location contains 0xFF, i, e. it has never been set.
-		EEPROM location which is not set at all.

28.3. EEPROM contents

28.3.1. General Setup

Address	Default	Name	Type	Description
0000-0001	00	EepromOscillator	A	Frequency adjustment
0002	20	ModulationDeviation	A	Mudulation adjustment
0030-0034	00	IPEI (ID for Handset)	A	IPEI
0036-003A	FF	PARK_1 (ID for Base 1)	-	PARK for registration 1
003B-003F	FF	PARK_2 (ID for Base 2)	-	PARK for registration 2
0040-0044	FF	PARK_3 (ID for Base 3)	-	PARK for registration 3
0045-0049	FF	PARK_4 (ID for Base 4)	-	PARK for registration 4
004A-004D	FF	PLI_1-PLI_4	D	Pli for registration 1-4. If set to FF the registration is deleted.

28.3.2. Signal detection (for factory use only)

Address	Default	Name	Country Setting	Type	Description
0100-0104	-	RFPI_1 (Base 1)	-	-	RFPI for registration 1
0105	-	SerClass_1	-	-	Service class for registration 1
0106	-	LAL_1	-	-	Location area level for registration 1
0107	-	IPUI_LEN_1	-	-	IPUI length for registration 1
0108-0114	-	IPUI_1	-	-	IPUI for registration 1
0115	-	ZAP_1	-	-	ZAP for registration 1
0116	-	STATUS_1	-	-	Status for registration 1
0117-126	-	UAK_1	-	-	UAK for registration 1
0130-134	-	RFPI_2 (Base 2)	-	-	RFPI for registration 2
0135	-	SerClass_2	-	-	Service class for registration 2
0136	-	LAL_2	-	-	Location area level for registration 2
0137	-	IPUI_LEN_2	-	-	IPUI length for registration 2
0138-0144	-	IPUI_2	-	-	IPUI for registration 2
0145	-	ZAP_2	-	-	ZAP for registration 2
0146	-	STATUS_2	-	-	Status for registration 2
0147-0156	-	UAK_2	-	-	UAK for registration 2
0160-0164	-	RFPI_3 (Base 3)	-	-	RFPI for registration 3
0165	-	SerClass_3	-	-	Service class for registration 3
0166	-	LAL_3	-	-	Location area level for registration 3
0167	-	IPUI_LEN_3	-	-	IPUI length for registration 3
0168-0174	-	IPUI_3	-	-	IPUI for registration 3
0175	-	ZAP_3	-	-	ZAP for registration 3
0176		STATUS_3	-	-	status for registration 3
0177-0186	-	UAK_3	-	-	UAK for registration 3
0190-0194	-	RFPI_4 (Base 4)	-	-	RFPI for registration 4
0195	-	SerClass_4	-	-	Service class for registration 4
0196	-	LAL_4	-	-	Location area level for registration 4
0197	-	IPUI_LEN_4	-	-	IPUI length for registration 4
0198-01A4	-	IPUI_4	-	-	IPUI for registration 4
01A5	-	ZAP_4	-	-	ZAP for registration 4
01A6	-	STATUS_4	-	-	UAK for registration 4
01A7-01B6	-	UAK_4	-	-	UAK for registration 4
0450-0451	-	HSPinCode	-	-	4 BCD Digits
0462	00	Language	0A	D	00 = English 01 = Spanish 02 = French 03 = Italian 04 = Dutch 05 = Turkish 06 = Hungarian 07 = Portuguese 08 = Polish 09 = Command 0A = German

Address	Default	Name	Country Setting	Type	Description
0467	00	FactoryLanguageSetting	0A	D	Factory setting for language: 00 = English 01 = Spanish 02 = French 03 = Italian 04 = Dutch 05 = Turkish 06 = Hungarian 07 = Portuguese 08 = Polish 09 = Command 0A = German
0469	07	MaxDigitsToMatch	x	D	Valid values: 01 - FF Digits above this value will not be evaluated, when matching.
046A	05	MinDigitsToMatch	x	D	Valid values: 01 - FF (-Must be lower tha MaxDigitsToMatch). -If all digits of one of the numbers matcl completely, -with at least this number of digits, we h a match. (-Or if they match completely with less digits, we also have match.)

28.3.3. Battery Parameters

Address	Default	Name	Type	Description
0F04	9A	LowVoltage	A	Voltage on which to start battery low-indication. The voltage has to be measured under tl value for 8 seconds before the handset start signaling low battery. LowVoltage[eeprom]=[ADC-steps]= LowVoltage[mV](14.35[mV/step])

28.3.4. Default Audio-Parameters

Address	Default	Name	Country Setting	Type	Description
0F36	46	GR-offset for volumestep 1	x	D	Bit7: AOG Bit6: AOG2 Bit5, bit0: Gain-receive (values ranging from 0x00 to 0x30, each step representi 1 dB)
0F37	5F	GR-offset for volumestep 2	x	A	Bit7: AOG Bit6: AOG2 Bit5, bit0: Gain-receive (values ranging from 0x00 to 0x30, each step representi 1 dB)
0F38	46	GR-offset for volumestep 3	00	D	Bit7: AOG Bit6: AOG2 Bit5, bit0: Gain-receive offset to volumestep 2 (values ranging from 0x0(0x30, each step representing 1 dB)
0F3F	02	EEVoiceVolume	x	D	Volume of the earpiece

28.3.5. VolumeSetting Second Block

Address	Default	Name	Country Setting	Type	Description
0F53	FF	Menu Config	x	D	bit 0 - Registration menu on/off 1/0 bit 1 - Select base menu on/off 1/0 bit 2 - Internal ringer menu on/off 1/0 bit 3 - Page ringer menu on/off 1/0 bit 4 - Standby mode menu on/off 1/0 bit 5 - Battery select menu on/off 1/0 bit 6 - Call wating menu on/off 1/0 bit 7 - Clip list on/off 1/0
0F54	01	RecVolStoreEnabled	x	D	00: Reciever volume will be reset to defa value when hooking on. 01: Reciever volume will be stored in eeprom when set in conversation.

29. HOW TO REPLACE FLAT PACKAGE IC

29.1. Preparation

- PbF (: Pb free) Solder

- Soldering Iron

Tip Temperature of 700°F ± 20°F (370°C ± 10°C)

Note: We recommend a 30 to 40 Watt soldering iron. An expert may be able to use a 60 to 80 Watt iron where someone with less experience could overheat and damage the PCB foil.

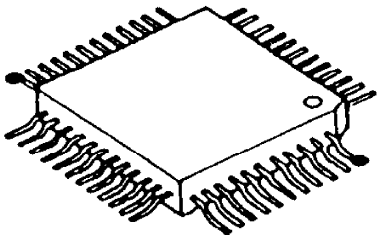
- Flux

Recommended Flux: Specific Gravity → 0.82.
Type → RMA (lower residue, non-cleaning type)

Note: See ABOUT LEAD FREE SOLDER (PbF: Pb free) ().

29.2. Procedure

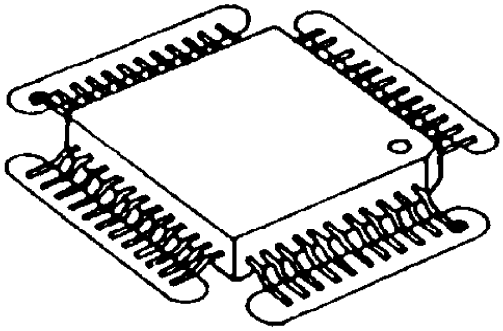
1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.



● – – – – – –Temporary soldering point.

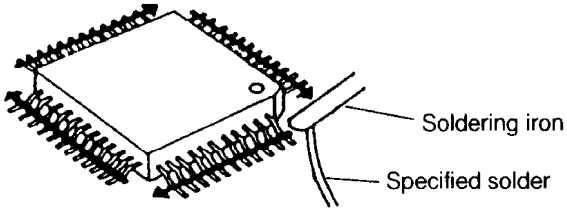
Be certain each pin is located over the correct pad on the PCB.

2. Apply flux to all of the pins on the IC.



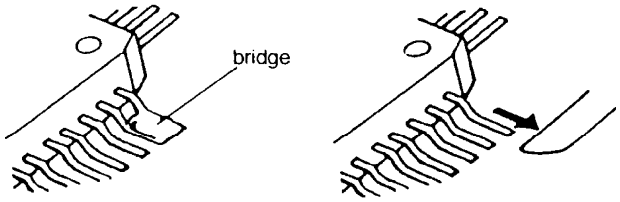
– – – – – Flux

3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.

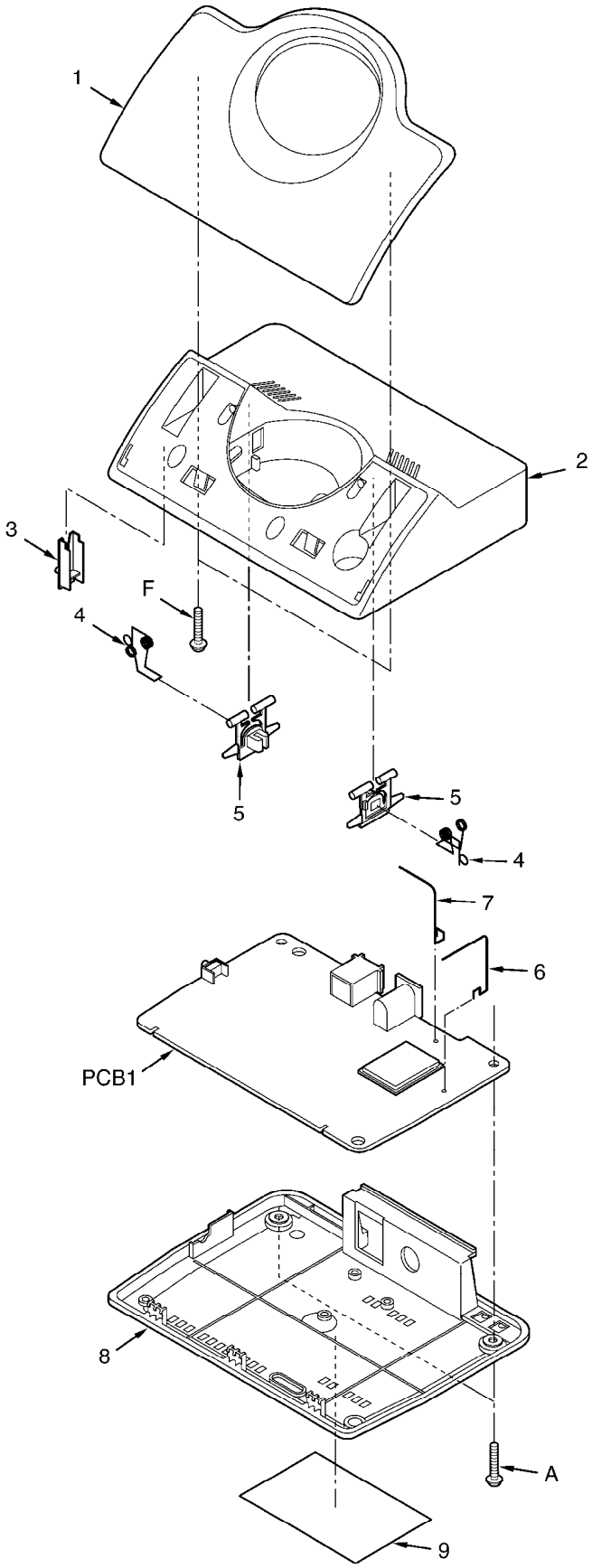


29.3. Modification Procedure of Bridge

1. **Add a small amount of solder to the bridged pins.**
2. **With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.**



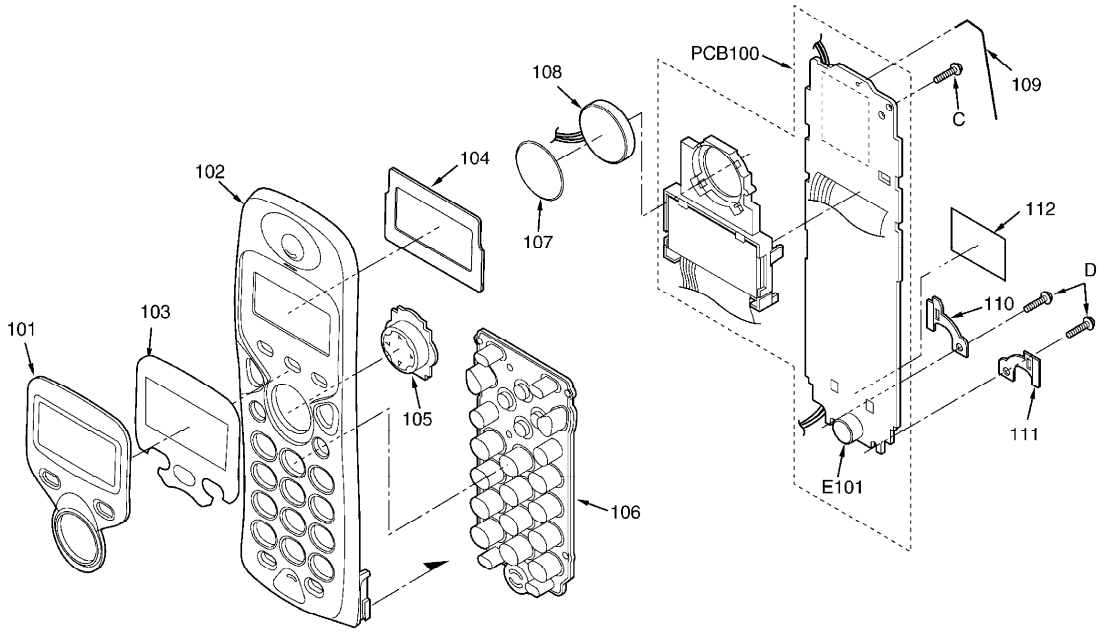
30. CABINET AND ELECTRICAL PARTS LOCATION (BASE UNIT)

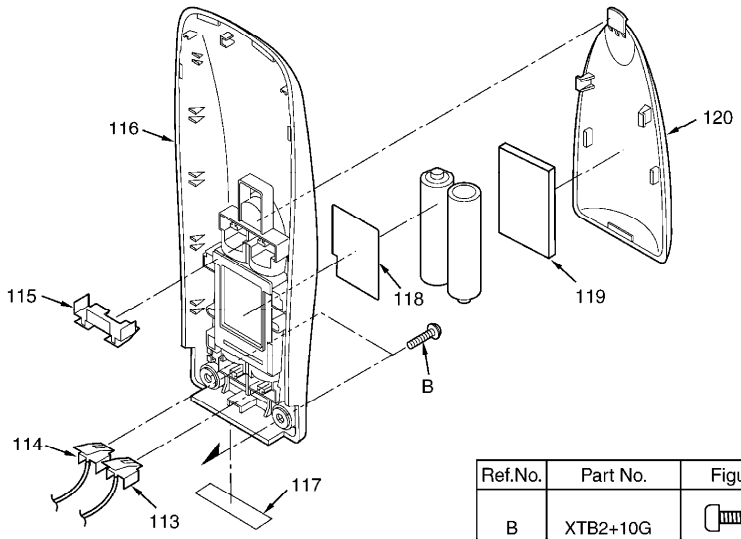


Ref.No.	Part No.	Figure
A	XTW26+12P	φ2.6×12mm
F	XTW26+12P	

		ϕ2.6×12mm

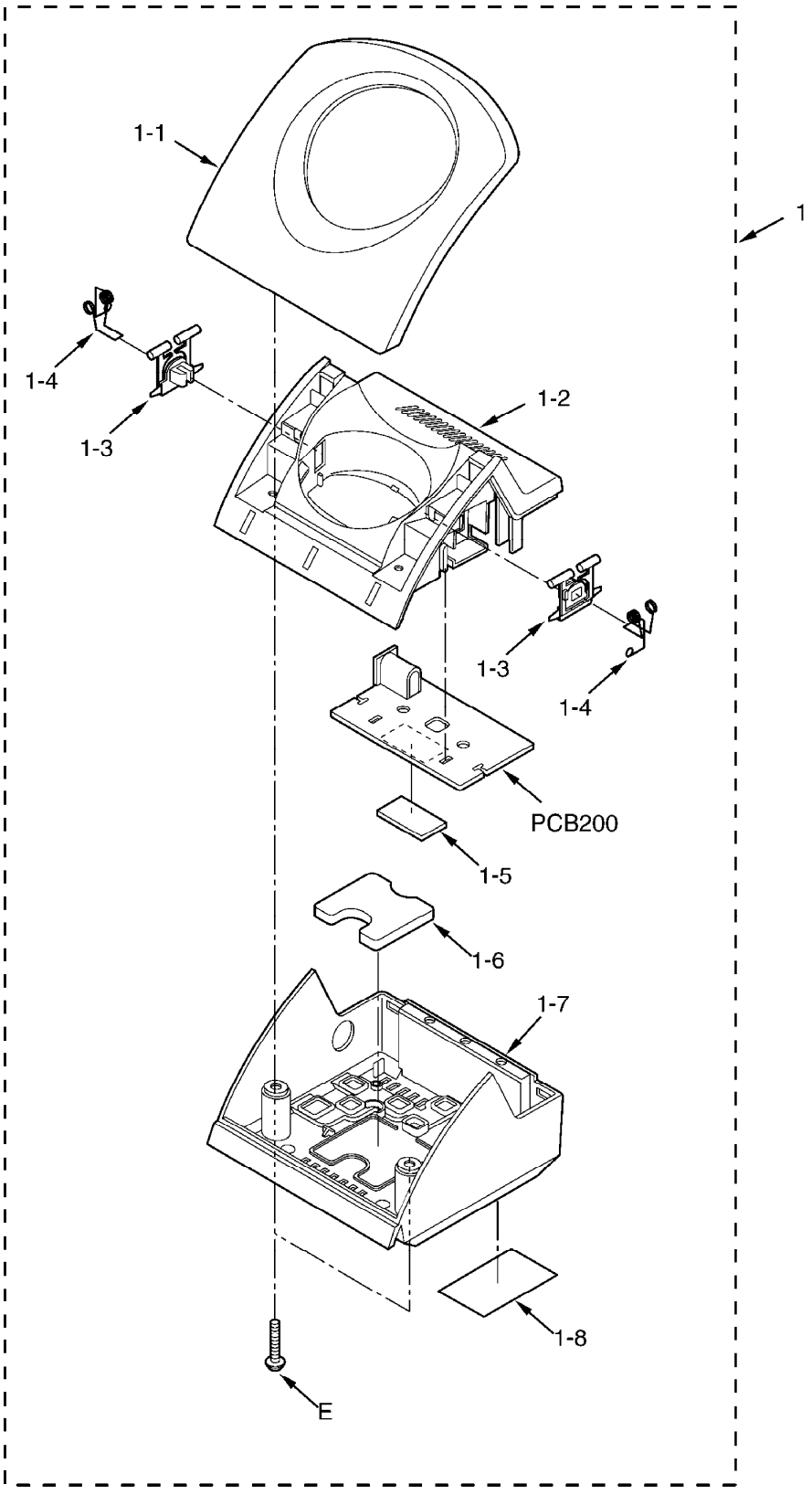
31. CABINET AND ELECTRICAL PARTS LOCATION (HANDSET)





Ref.No.	Part No.	Figure
B	XTB2+10G	ϕ2×10mm
C	XTB2+8G	ϕ2×8mm
D	XTB2+8G	ϕ2×8mm

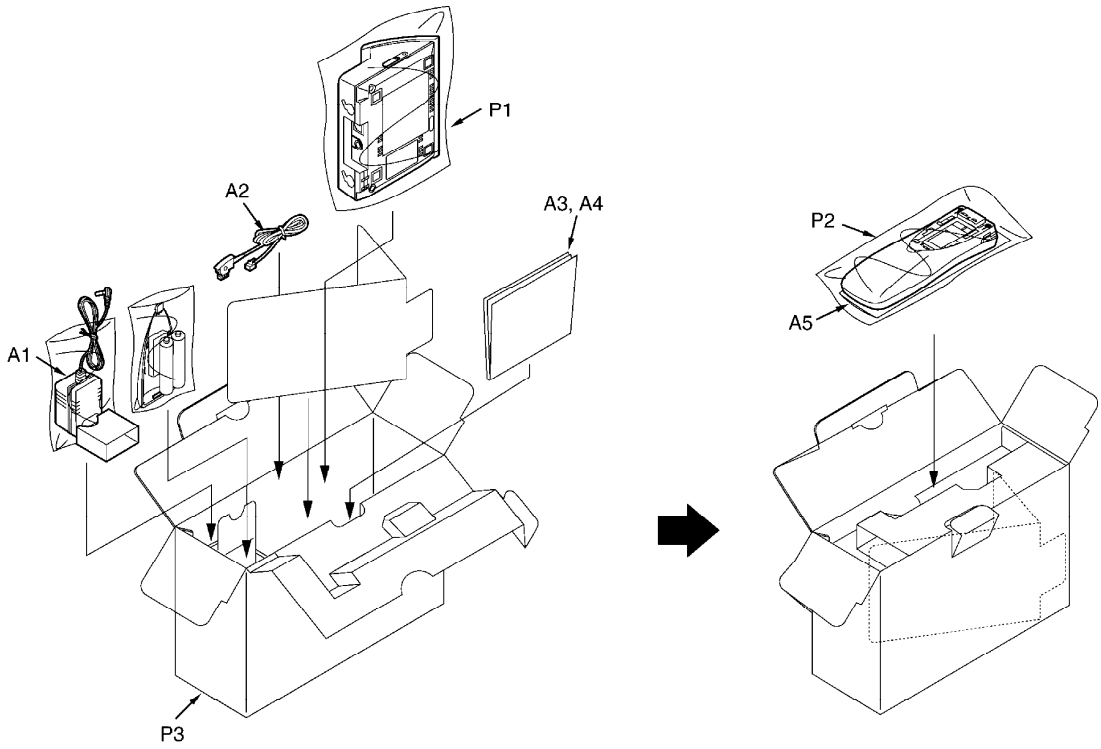
32. CABINET AND ELECTRICAL PARTS LOCATION (CHARGER UNIT)



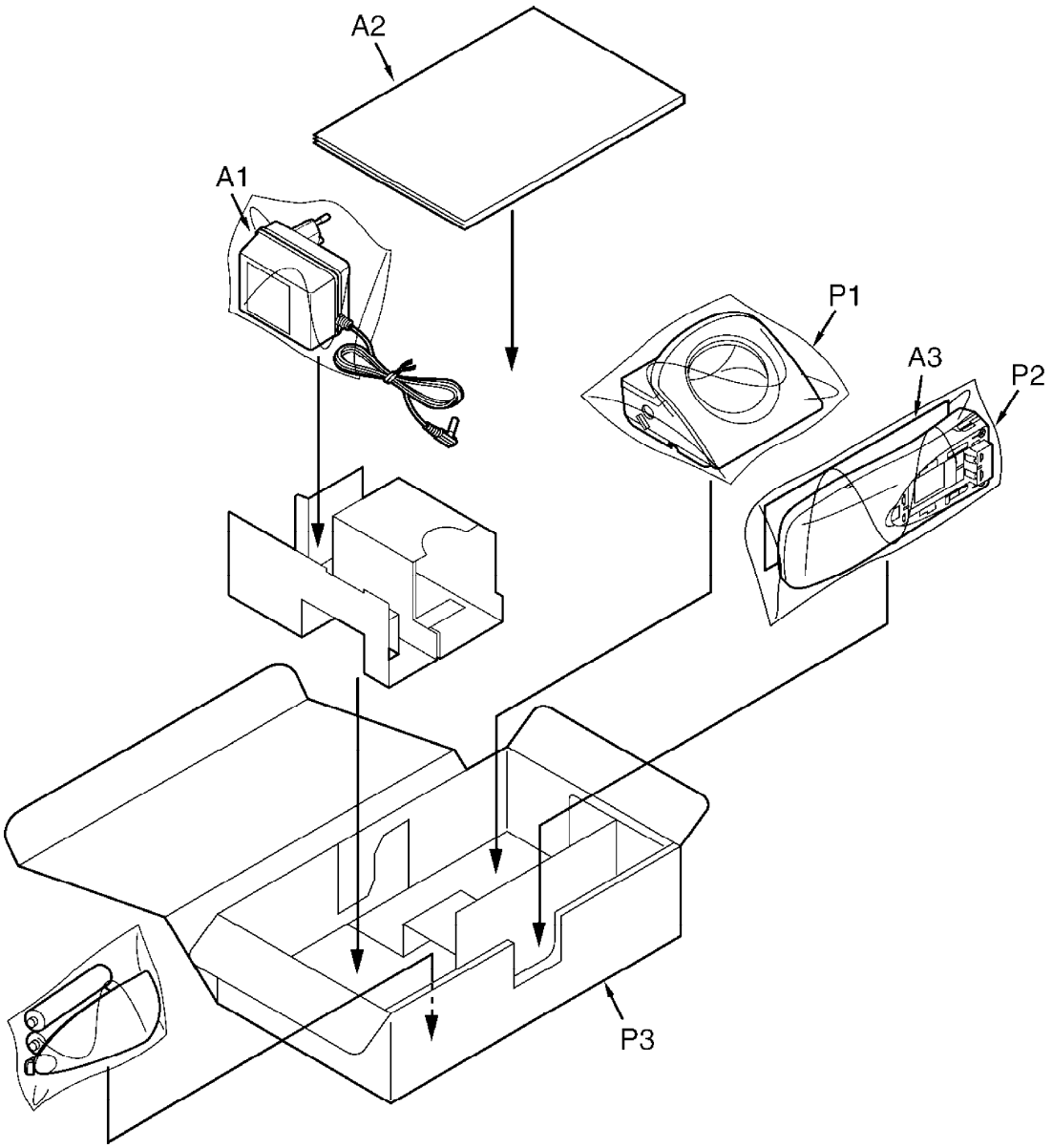
Ref.No.	Part No.	Figure
E	XTW26+14P	ϕ2.6 × 14mm

33. ACCESSORIES AND PACKING MATERIALS

33.1. KX-TCD420GS

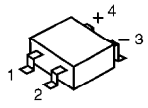
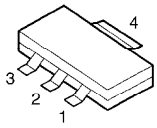
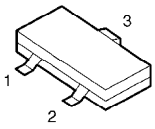
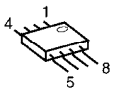
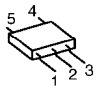
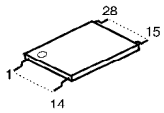
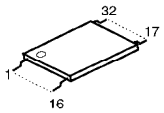
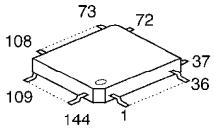
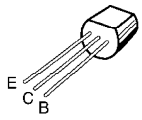
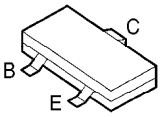
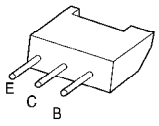
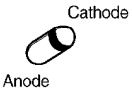
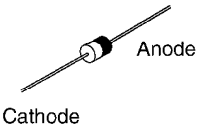
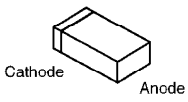
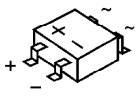
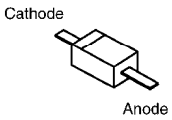
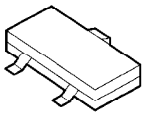
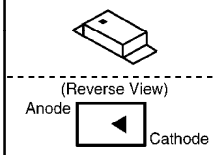


33.2. KX-A142EXS

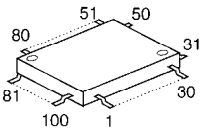
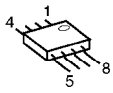
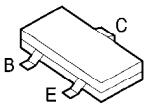
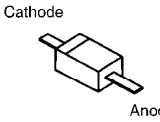
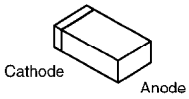


34. TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

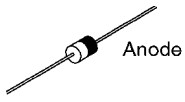
34.1. Base Unit

 PQVIPC817CD	 PQVILM1117MP	 PSVIXC62FP27	 PQWI2D420GH	 PQVILMV321M5
 C3FBLC000030	 PQWI1D420GH	 C1CB00001558	 2SA1625	 PQVTBF822T7 B1ABCE000009 PQVTDTC143K
 2SD1994A	 PQVDBZV55C02	 B0JAME000085	 MA2J11100L MAZ80470ML	 PQVDS1ZB60F1
 MAZY30000L	 PQVDDAN217 B0DDCM000001	 LNJ308G8JRA		

34.2. Handset

 C2HBAK000005	 PQWI1D410GR	 PQVTFDN335N, B1ADGE000004 UN5216	 B0JCME000035
 MA2Z74800L MAZ83900ML			

34.3. Charger Unit

 B0JAME000085

35. REPLACEMENT PARTS LIST

Note:

1. RTL (Retention Time Limited)

Note:
The marking (RTL) indicates that the Retention Time is limited for this item.
After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention. After the end of this period, the assembly will no longer be available.

2. Important safety notice

Components identified by the ⚠ mark indicates special characteristics important for safety. When replacing any of these components, only use specified manufacture's parts.

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS

Unless otherwise specified;
All resistors are in ohms (Ω) K=1000 Ω , M=1000k Ω
All capacitors are in MICRO FARADS (μ F)P= μ μ F
***Type & Wattage of Resistor**

Type

ERC:Solid ERDS:Carbon ERJ:Chip	ERX:Metal Film ERG:Metal Oxide ER0:Metal Film	PQ4R:Chip ERS:Fusible Resistor ERF:Cement Resistor

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W

*Type & Voltage Of Capacitor

Type

ECFD:Semi-Conductor ECQS:Styrol ECUV,PQCUV,ECUE:Chip ECQMS:Mica	ECCD,ECKD,ECBT,F1K,ECUV:Ceramic ECQE,ECQV,ECQG:Polyester ECEA,ECST,EEE:Electlytic ECQP:Polypropylene

Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H:50V 2A:100V 2E:250V 2H:500V	05:50V 1:100V 2:200V	0F:3.15V 1A:10V 1V:35V 0J:6.3V	0J :6.3V 1A :10V 1C :16V 1E,25:25V	1V :35V 50,1H:50V 1J :16V 2A :100V

35.1. Base Unit

35.1.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQGG10154V4	GRILLE	ABS-HB
2	PQKM10586Z3	CABINET BODY	ABS-HB
3	PQHR10962Z	OPTIC CONDUCTIVE PARTS, LED LENS	
4	PQJT10203Z	TERMINAL	
5	PQKE10356Z1	GUIDE, CHARGE TERMINAL CASE	POM-HB
6	PQSA10131Z	ANTENNA, MAIN	
7	PQSA10132Z	ANTENNA, SUB	
8	PQYF10560Z3	CABINET COVER	ABS-HB
9	PQGT15747Z	NAME PLATE	

35.1.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB1	PQWP1D420GH	MAIN P.C.BOARD ASS'Y (RTL)	
		(ICs)	
IC1	PQVIPC817CD	IC	S
IC2	PQVILM1117MP	IC	S
IC3	PSVIXC62FP27	IC	
IC4	PQWI2D420GH	IC	
IC5	PQVILMV321M5	IC	
IC6	C3FBLC000030	IC	
IC7	PQWI1D420GH	IC	
IC8	C1CB00001558	IC	
		(TRANSISTORS)	
Q2	2SA1625	TRANSISTOR(SI)	S
Q4	PQVTBF822T7	TRANSISTOR(SI)	
Q7	B1ABCE000009	TRANSISTOR(SI)	
Q8	B1ABCE000009	TRANSISTOR(SI)	
Q9	2SD1994A	TRANSISTOR(SI)	
Q11	B1ABCE000009	TRANSISTOR(SI)	
Q12	B1ABCE000009	TRANSISTOR(SI)	
Q13	PQVTDTC143K	TRANSISTOR(SI)	
		(DIODES)	
D2	PQVDBZV55C02	DIODE(SI)	
D3	PQVDBZV55C02	DIODE(SI)	
D4	B0JAME000085	DIODE(SI)	
D5	MA2J11100L	DIODE(SI)	
D6	PQVDS1ZB60F1	DIODE(SI)	S
D7	MAZY30000L	DIODE(SI)	
D9	PQVDDAN217U	DIODE(SI)	
D10	B0DDCM000001	DIODE(SI)	
D11	MAZ80470ML	DIODE(SI)	
D12	MAZ80470ML	DIODE(SI)	
D13	MAZ80470ML	DIODE(SI)	
D14	PQVDBZV55C02	DIODE(SI)	
LED8	LNJ308G8JRA	LED	
		(COILS)	
L2	PQLQR4D4R7K	COIL	
L3	PQLQR2M33NK	COIL	
		(JACKS)	
J1	PQJJ1B4Y	DC JACK	
J2	PQJJ1TB26Z	TEL JACK	S
		(RESISTORS)	
R1	PQ4R18XJ472	4.7K	S
R2	ERJ3GEYJ103	10K	
R4	ERJ3GEYJ184	180K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6	ERJ3GEYJ184	180K	
R12	ERJ3GEYJ104	100K	
R13	PQ4R10XJ562	5.6K	S
R14	ERJ3GEYJ103	10K	
R15	ERJ3GEYJ222	2.2K	
R20	PQ4R18XJ000	0	S
R21	ERJ3GEYJ333	33K	
R23	ERJ3GEYJ562	5.6K	
R24	ERJ12YJ220	22	
R25	ERJ3GEYJ104	100K	
R26	ERJ3GEYJ333	33K	
R27	ERJ12YJ560	56	
R28	ERJ3GEYJ474	470K	
R29	ERJ3GEYJ105	1M	
R30	ERJ3GEYJ221	220	
R34	ERJ3GEYJ391	390	
R35	ERJ3GEYJ102	1K	
R36	ERJ3GEYJ103	10K	
R37	ERJ3GEYJ102	1K	
R38	ERJ3GEYJ102	1K	
R39	ERJ3GEYJ684	680K	
R40	ERJ3GEYJ684	680K	
R41	ERJ3GEYJ473	47K	
R42	ERJ3GEYJ124	120K	
R43	ERJ3GEYJ473	47K	
R44	ERJ3GEYJ101	100	
R45	ERJ3GEYJ101	100	
R46	ERJ3GEYJ124	120K	
R47	ERJ3GEYJ823	82K	
R48	ERJ3GEYJ102	1K	
R49	ERJ3GEYJ822	8.2K	
R50	ERJ3GEYJ823	82K	
R51	ERJ3GEYJ123	12K	
R52	ERJ3GEYJ823	82K	
R53	ERJ3GEYJ683	68K	
R54	ERJ3GEYJ104	100K	
R55	ERJ3GEYJ101	100	
R56	ERJ3GEYJ103	10K	
R57	ERJ3GEYJ151	150	
R59	ERJ1WYJ330	33	
R60	ERJ1WYJ330	33	
R61	ERJ3GEYJ101	100	
R62	ERJ3GEYJ221	220	
R63	ERJ3GEYJ103	10K	
R64	ERJ3GEYJ103	10K	
R65	ERJ3GEYJ103	10K	
R66	ERJ3GEYJ103	10K	
R67	ERJ3GEYJ222	2.2K	
R68	ERJ3GEYJ472	4.7K	
R70	ERJ3GEYJ103	10K	
R71	ERJ3GEYJ102	1K	
R72	ERJ3GEYJ102	1K	
R73	ERJ3GEYJ102	1K	
R74	ERJ3GEYJ101	100	
R75	ERJ3GEYJ103	10K	
R76	ERJ3GEYJ103	10K	
R77	ERJ3GEYJ102	1K	

Ref. No.	Part No.	Part Name & Description	Remarks
R78	ERJ3GEYJ154	150K	
R79	ERJ3GEYJ390	39	
R80	ERJ3GEYJ390	39	
R82	ERJ3GEYJ330	33	
R83	ERJ3GEYJ181	180	
R84	ERJ3GEYJ181	180	
R85	ERJ3GEYJ681	680	
R86	ERJ3GEYJ155	1.5M	
C11	PQ4R10XJ562	5.6K	S
C42	ERJ3GEYJ472	4.7K	
C56	ERJ3GEY0R00	0	
JMP9	PQ4R10XJ000	0	S
		(CAPACITORS)	
C1	ECUV1C104KBV	0.1	
C2	ECQE2E474KZ	0.47	S
C3	ECUV1H103KBV	0.01	
C4	ECUV1H103KBV	0.01	
C6	ECKD2H681KB	680P	S
C7	ECKD2H681KB	680P	S
C14	ECUV1H103KBV	0.01	
C15	ECUV1H103KBV	0.01	
C16	PQCUV1A105KB	1	
C17	ECUV1H103KBV	0.01	
C18	PQCUV1A105KB	1	
C19	PQCUV1C104KB	0.1	
C21	ECEA1HKS100	10	S
C22	PQCUV1H154KR	0.15	
C24	ECKD2H102KB2	0.001	S
C25	ECKD2H102KB2	0.001	S
C26	ECUV1C104KBV	0.1	
C27	ECJ1VC1H151J	150P	
C28	ECUV1C104KBV	0.1	
C29	ECUV1C104KBV	0.1	
C30	ECUV1C104KBV	0.1	
C31	ECUV1H100DCV	10P	
C32	ECUV1H100DCV	10P	
C33	PQCUV1H100DC	10P	
C34	ECUV1H100DCV	10P	
C35	ECUV1H100DCV	10P	
C36	ECEA1CK101	100	S
C37	ECEA0JKA331	330	
C39	ECEA0JKA331	330	
C40	ECUV1A105ZFV	1	
C41	ECUV1C104KBV	0.1	
C43	ECUV1A105ZFV	1	
C44	ECUV1C104KBV	0.1	
C45	ECUV1A105ZFV	1	
C46	ECUV1H153KBV	0.015	
C47	ECUV1C823KBV	0.082	
C48	ECUV1C104KBV	0.1	
C49	ECUV1H333KBV	0.033	S
C50	ECUV1C105ZFV	1	
C51	ECUV1C105ZFV	1	
C52	ECUV1C105ZFV	1	
C53	ECUV1C823KBV	0.082	
C54	ECUV1H060DCV	6P	S
C55	ECUV1H270JCV	27P	

Ref. No.	Part No.	Part Name & Description	Remarks
C57	ECUV1H100DCV	10P	
C58	ECUV1H100DCV	10P	
C60	ECUV1H330JCV	33P	
C61	ECUV1A475KB	4.7	
C62	ECUV1H060DCV	6P	S
C63	ECUV1H100DCV	10P	
C64	ECUV1H100DCV	10P	
C65	ECUV1H030CCV	3P	
C66	ECUV1H2R0CCV	2	
C67	ECUV1H100DCV	10P	
C68	ECUV1H2R0CCV	2	
C69	ECUV1A475KB	4.7	
C70	ECUV1H102KBV	0.001	
C71	ECUV1H101JCV	100P	
C72	ECUV1H102KBV	0.001	
C75	ECUV1H100DCV	10P	
C76	ECUV1H100DCV	10P	
C77	PQCUV1H020CC	2P	
C78	ECUV1H2R0CCV	2	
C79	ECUV1H100DCV	10P	
C80	ECUV1H2R0CCV	2	
C88	ECUV1H100DCV	10P	
C89	ECUV1H220JCV	22P	
C90	PQCUV1C474KB	0.47	
C91	PQCUV1C104KB	0.1	
C92	ECUV1H100DCV	10P	
C96	ECUV1H100DCV	10P	
R22	ECUV1H100DCV	10P	
R69	ECUV1H220JCV	22P	
		(OTHERS)	
IC9	J3FKK0000003	RF UNIT	
S1	K0H1BB000018	SPECIAL SWITCH, TACTILE	
SA1	PQVDDSS301L	VARISTOR (SURGE ABSORBER)	S
X1	H0D103500003	CRYSTAL OSCILLATOR	

35.2. Handset

35.2.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
101	PQGP10225Y3	PANEL, LCD	AS-HB
102	PQKM10587W4	CABINET BODY	ABS-HB
103	PQHS10553Z	TAPE, DOUBLE SIDE	
104	PQHS10554Z	SPACER, LCD	
105	PQBC10375Z1	PUSH BUTTON, NAVI	
106	PQSX10224Q	KEYBOARD SWITCH, 20KEY	
107	PQHS10467Z	COVER, SP NET	
108	L0AD02A00016	SPEAKER	
109	PQSA10133Z	ANTENNA	
110	PQJT10204Z	TERMINAL (L)	
111	PQJT10205Z	TERMINAL (R)	
112	PQHX11202Z	INSULATOR	
113	PQJC10058Z	BATTERY TERMINAL (+)	
114	PQJC10057Z	BATTERY TERMINAL (-)	
115	PQJC10056Z	BATTERY TERMINAL	
116	PQKF10582Z4	CABINET COVER	ABS-HB
117	PQGT15748Z	NAME PLATE	
118	PQHX11174Z	PLASTIC PARTS, BATTERY COVER SHEET	
119	PQHS10561Y	SPACER, BATTERY COVER	
120	PQKK10134Z4	LID, BATTERY	ABS-HB

35.2.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB100	PQWP1D410GR	MAIN P.C.BOARD ASS'Y (RTL)	
		(ICs)	
IC1	C2HBAK000005	IC	
IC2	PQWI1D410GR	IC	S
		(TRANSISTORS)	
Q1	PQVTFDN335N	TRANSISTOR(SI)	S
Q2	B1ADGE000004	TRANSISTOR(SI)	
Q3	UN5216	TRANSISTOR(SI)	
		(DIODES)	
D1	B0JCME000035	DIODE(SI)	
D3	MA2Z74800L	DIODE(SI)	
D4	MAZ83900ML	DIODE(SI)	
D6	MA2Z74800L	DIODE(SI)	
D7	MA2Z74800L	DIODE(SI)	
		(COILS)	
L2	G1A470L00001	COIL	
L3	PQLQR4D4R7K	COIL	
L4	G1C100MA0072	COIL	
L5	G1C100MA0072	COIL	
F1	PQLQR2M5N6K	COIL	S
		(RESISTORS)	
R1	ERJ3GEYJ222	2.2K	
R2	ERJ8BQJR30	0.3	
R3	ERJ3GEYJ560	56	
R4	ERJ3GEYJ103	10K	
R5	ERJ3GEYJ331	330	
R6	ERJ3GEYJ332	3.3K	
R7	ERJ3GEYJ331	330	
R8	ERJ3GEYJ331	330	
R11	ERJ3GEY0R00	0	
R17	ERJ3GEY0R00	0	
R18	ERJ3GEYJ330	33	

Ref. No.	Part No.	Part Name & Description	Remarks
R19	ERJ3GEYJ153	15K	
R20	ERJ3GEY0R00	0	
R21	ERJ6RSJR10V	0.1	
R22	ERJ3GEY0R00	0	
R23	ERJ3GEYJ2R2	2.2	
R24	ERJ3GEY0R00	0	
		(CAPACITORS)	
C2	ECUV1A475KB	4.7	
C3	ECUV1C104KBV	0.1	
C4	ECUV1C104KBV	0.1	
C5	ECST0JY475	4.7	
C6	ECUV1H100DCV	10P	
C7	ECUV1C104KBV	0.1	
C8	ECUV1H100DCV	10P	
C10	ECUV1H100DCV	10P	
C11	ECUV1H100DCV	10P	
C12	ECUV1H100DCV	10P	
C14	EEE1AA221P	220	
C15	EEE1AA221P	220	
C16	ECUV1H1R0CCV	1	
C17	ECUV1H180JCV	18P	
C18	ECUV1C104KBV	0.1	
C20	ECUV1C104KBV	0.1	
C21	ECUV1C104KBV	0.1	
C22	ECUV1C104KBV	0.1	
C23	ECUV1C104KBV	0.1	
C24	ECUV1C104KBV	0.1	
C26	ECUV1C104KBV	0.1	
C27	ECUV1C104KBV	0.1	
C28	ECUV1C104KBV	0.1	
C29	ECUV1C104KBV	0.1	
C30	ECUV1C104KBV	0.1	
C31	ECUV1H100DCV	10P	
C33	ECUV1A225KB	2.2	
C54	ECUV1H100DCV	10P	
C55	ECUV1H020CCV	2P	
C56	ECUV1H020CCV	2P	
C57	ECUV1H330JCV	33P	
C60	ECUV1A475KB	4.7	
C62	ECUV1A105KBV	1	
C63	ECUV1H100DCV	10P	
C64	ECUV1A105KBV	1	
C65	ECUV1H020CCV	2P	
C66	ECUV1H020CCV	2P	
		(OTHERS)	
E101	L0CBAB000052	MICROPHONE	
IC3	J3FKK0000003	RF UNIT	
X1	H0D103500002	CRYSTAL OSCILLATOR	

35.3. Charger Unit

35.3.1. Cabinet and Electrical Parts

Ref. No.	Part No.	Part Name & Description	Remarks
1	PQLV30018ZS1	ACCESSORY PARTS	
1-1	PQGG10155Y4	GRILLE	ABS-HB
1-2	PQKM10591Z2	CABINET BODY	PS-HB
1-3	PQKE10356Z1	GUIDE, CHARGE TERMINAL CASE	POM-HB
1-4	PQJT10206Z	CHARGE TERMINAL	
1-5	PQHX10991Z	CUSHION, URETHANE FORM	
1-6	PQMH10426Z	WEIGHT	
1-7	PQYF10563Z2	CABINET COVER	PS-HB
1-8	PQGT15558X	NAME PLATE	

35.3.2. Main P.C.Board Parts

Ref. No.	Part No.	Part Name & Description	Remarks
PCB200	PQWPA142ESCH	MAIN P.C.BOARD ASS'Y (RTL)	
		(DIODE)	
D1	B0JAME000085	DIODE(SI)	
		(JACK)	
CN1	K2EZ2B000040	JACK	S
		(RESISTORS)	
R1	ERJ1WYJ220	22	
R2	ERJ1WYJ270	27	

35.4. Accessories and Packing Materials

35.4.1. KX-TC420GS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV19CEZ	AC ADAPTOR	⚠
A2	PQJA10139Z	CORD, TELEPHONE	
A3	PQQX13540Z	INSTRUCTION BOOK	
A4	PQQW12792Z	QUICK GUIDE	
A5	PQQW12846W	LEAFLET, RECHARGE	
P1	PQPP10100Z	PROTECTION COVER (for Base Unit)	
P2	PQPP10084Z	PROTECTION COVER (for Handset)	
P3	PQPK13827Z	GIFT BOX	

35.4.2. KX-A142EXS

Ref. No.	Part No.	Part Name & Description	Remarks
A1	PQLV200CEZ	AC ADAPTOR	⚠
A2	PQQX13629Y	INSTRUCTION BOOK	
A3	PQQW12846W	LEAFLET, RECHARGE	
P1	PQPP10086Z	PROTECTION COVER (for Charger Unit)	
P2	PQPP10084Z	PROTECTION COVER (for Handset)	
P3	PQPK13899Z	GIFT BOX	

35.5. Fixtures and Tools

Part No.	Part Name & Description	Remarks
PQZZTCD705BX	I2C PCB	
PQZZ1CD705BX	RS232C CABLE	
PQZZ2CD705BX	CLIP CABLE	
PQZZ3CD705BX	DC CABLE	
PQZZTCD420E	BATCH FILE	

Note:
See CHECK PROCEDURE (BASE UNIT) (), and CHECK PROCEDURE (HANDSET) ().

35.6. Memo

36. SCHEMATIC DIAGRAM (BASE UNIT)

37. SCHEMATIC DIAGRAM (HANDSET)

38. SCHEMATIC DIAGRAM (CHARGER UNIT)

39. CIRCUIT BOARD (BASE UNIT)

39.1. Component View

39.2. Flow Solder Side View

40. CIRCUIT BOARD (HANDSET)

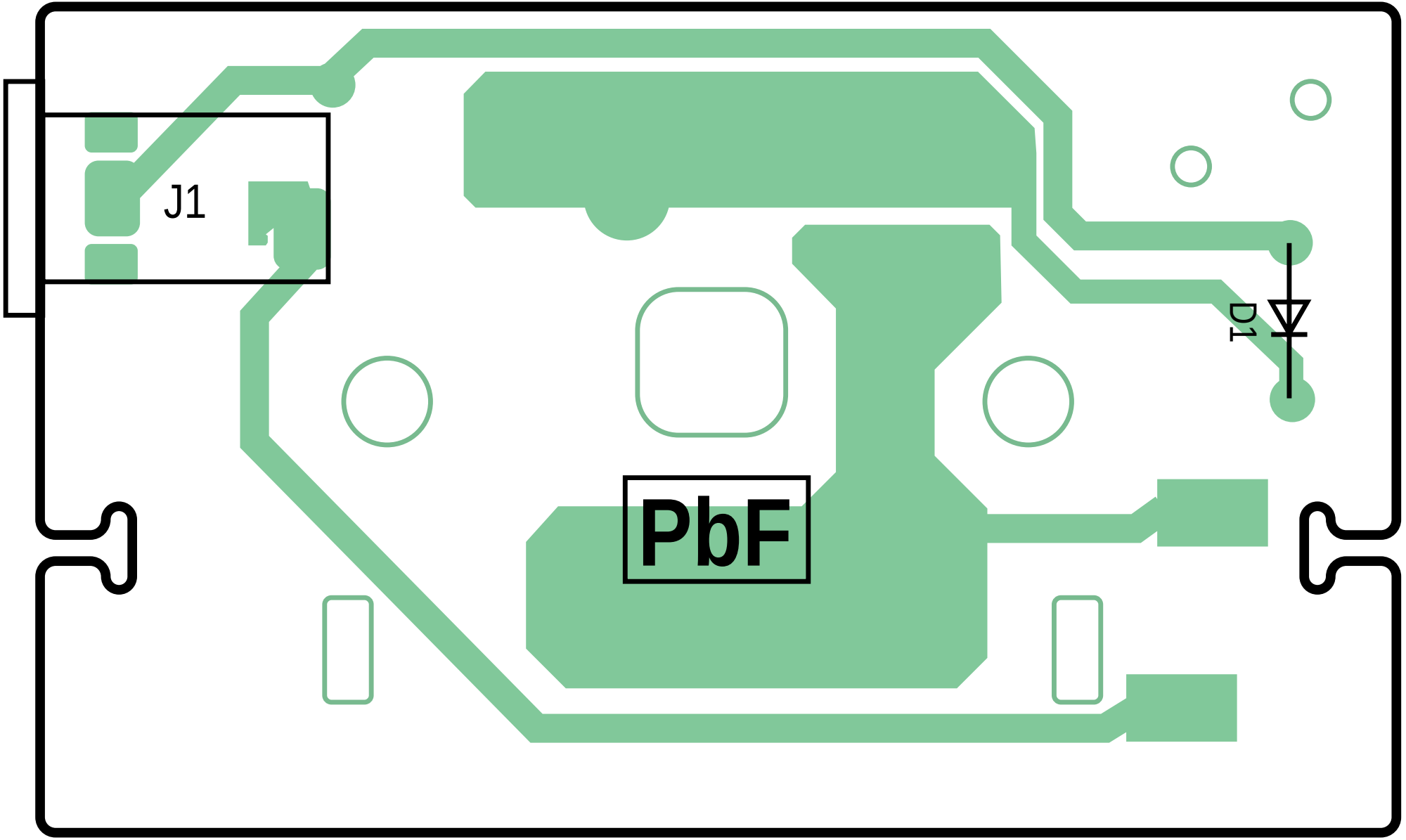
40.1. Component View

40.2. Flow Solder Side View

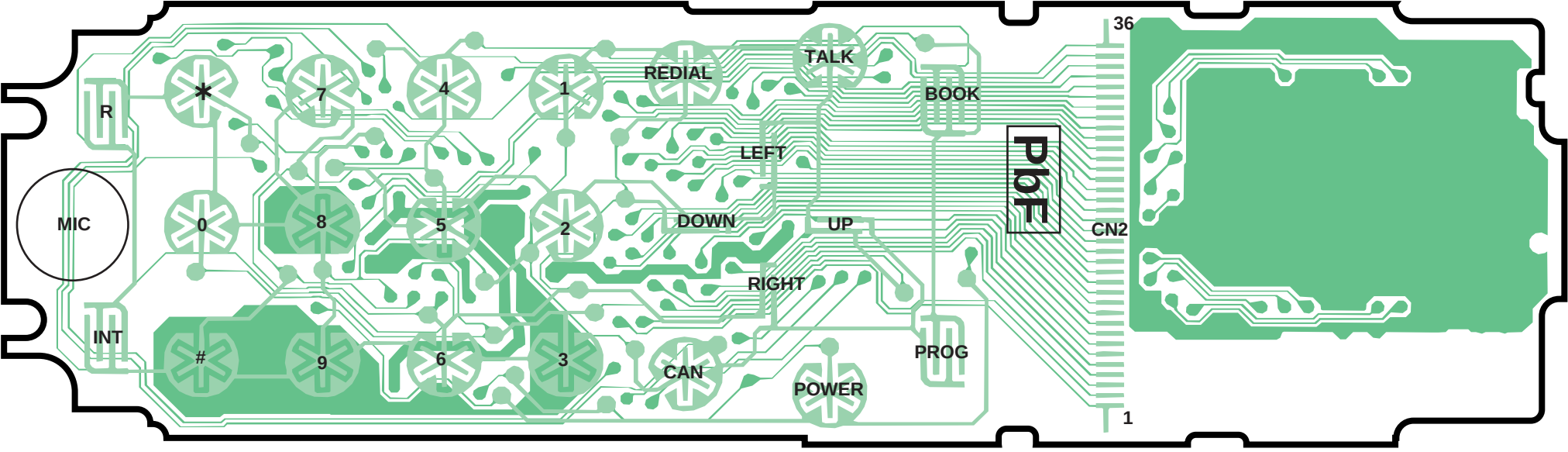
41. CIRCUIT BOARD (CHARGER UNIT)

41.1. Component View

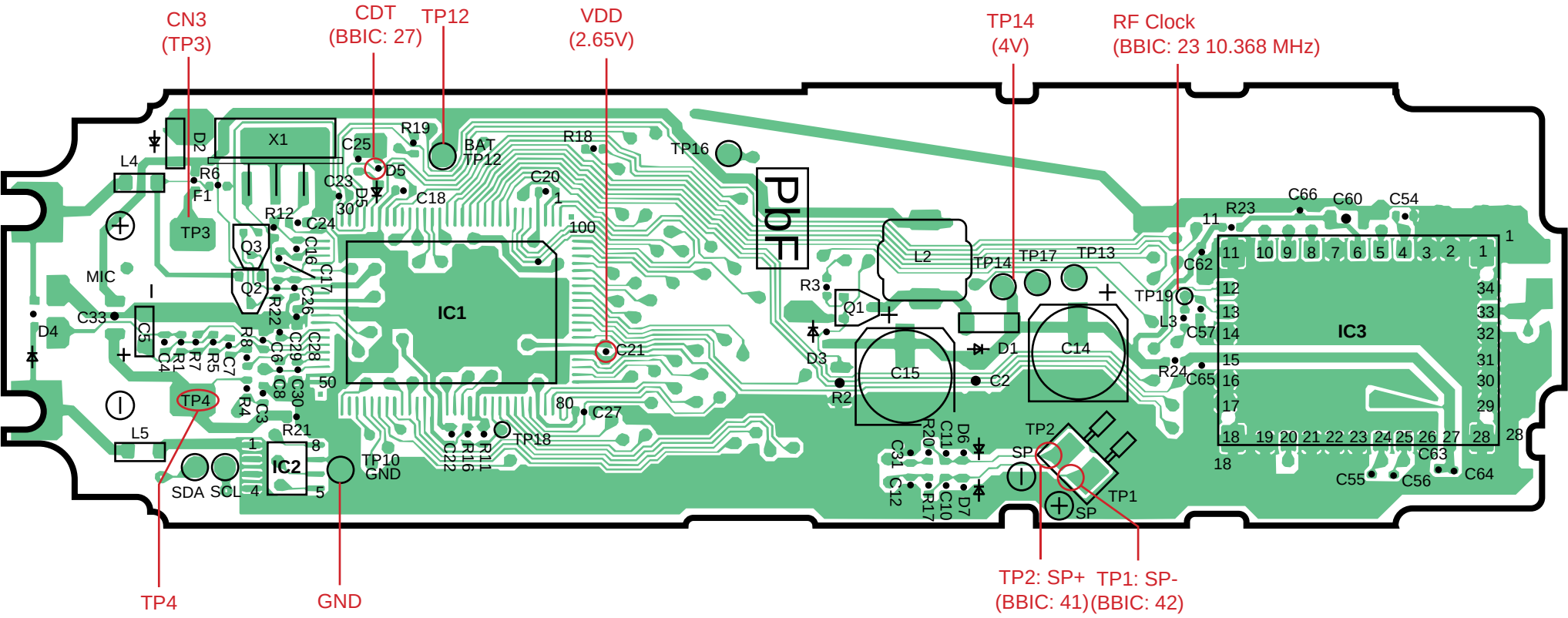
41.2. Flow Solder Side View



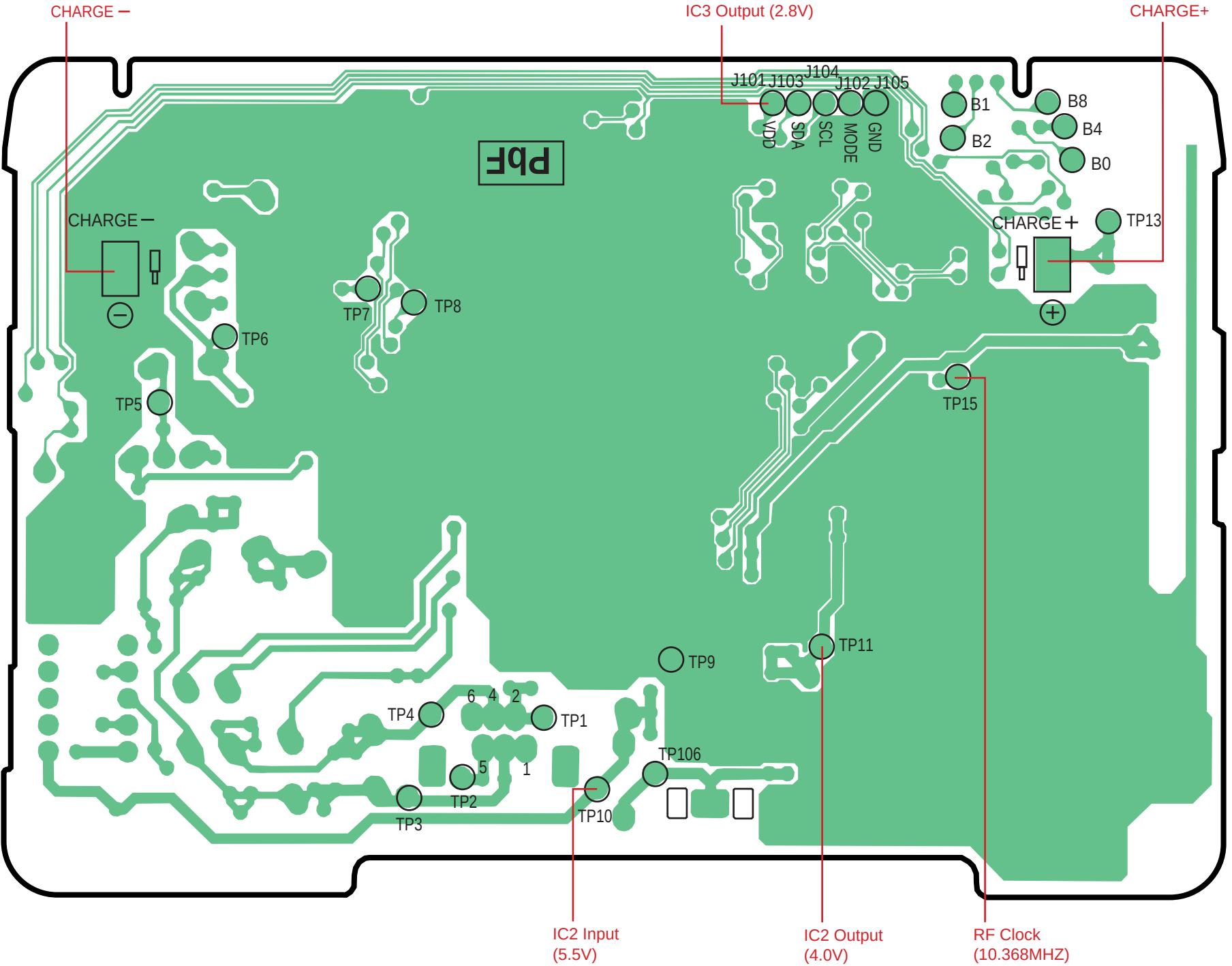
CIRCUIT BOARD (CHARGER UNIT) Component View



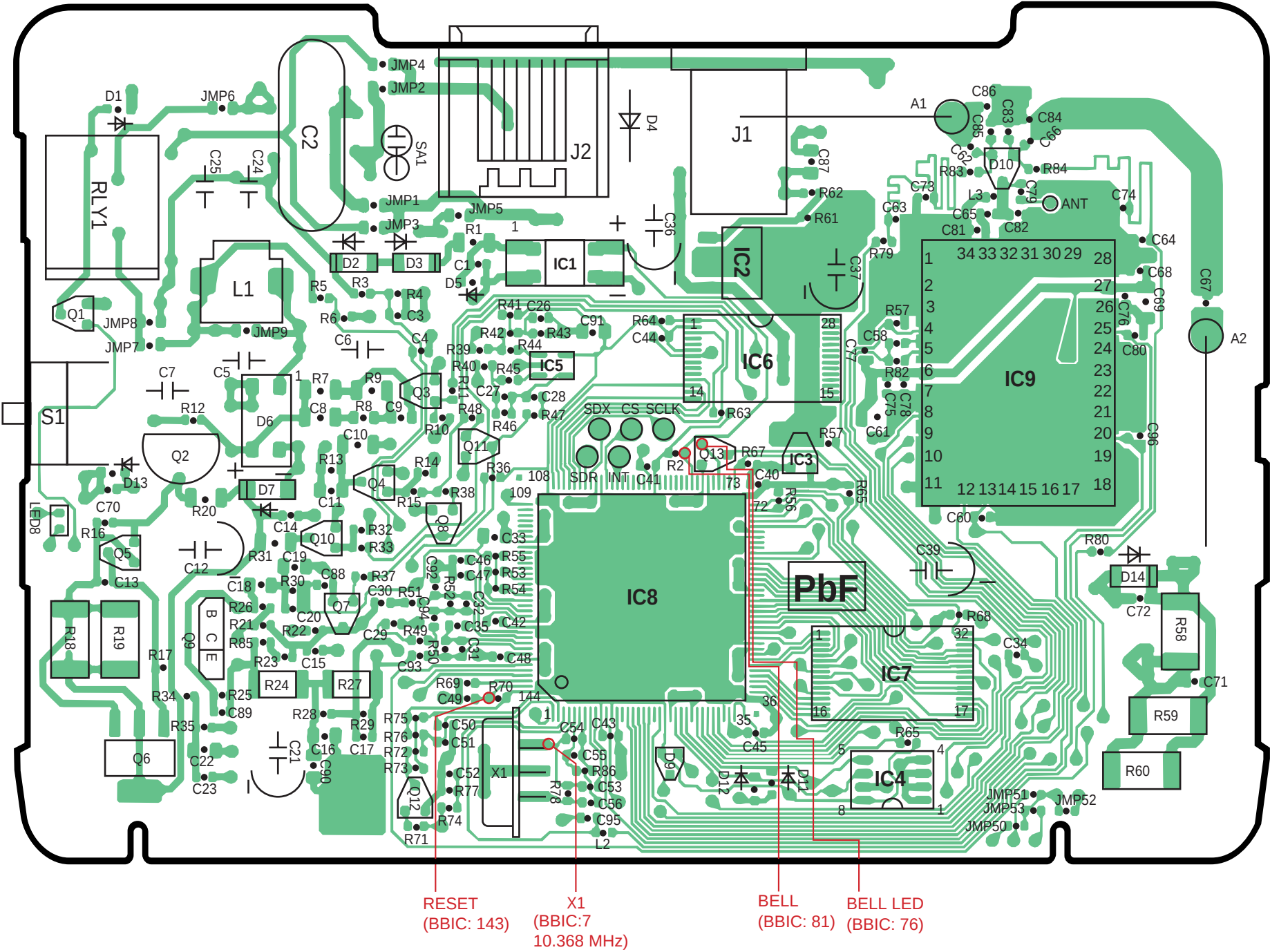
KX-A142EXS CIRCUIT BOARD (HANDSET) Flow Solder Side View



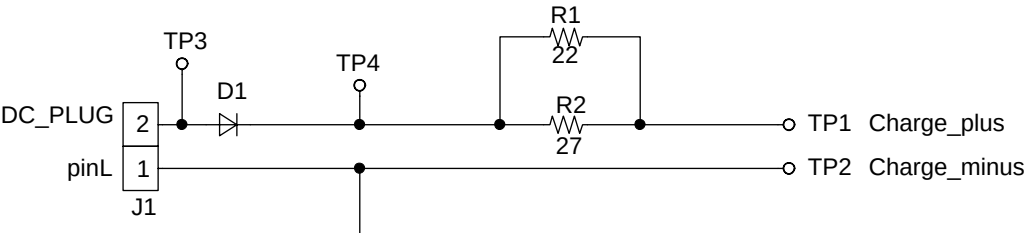
KX-A142EXS CIRCUIT BOARD (HANDSET) Component View



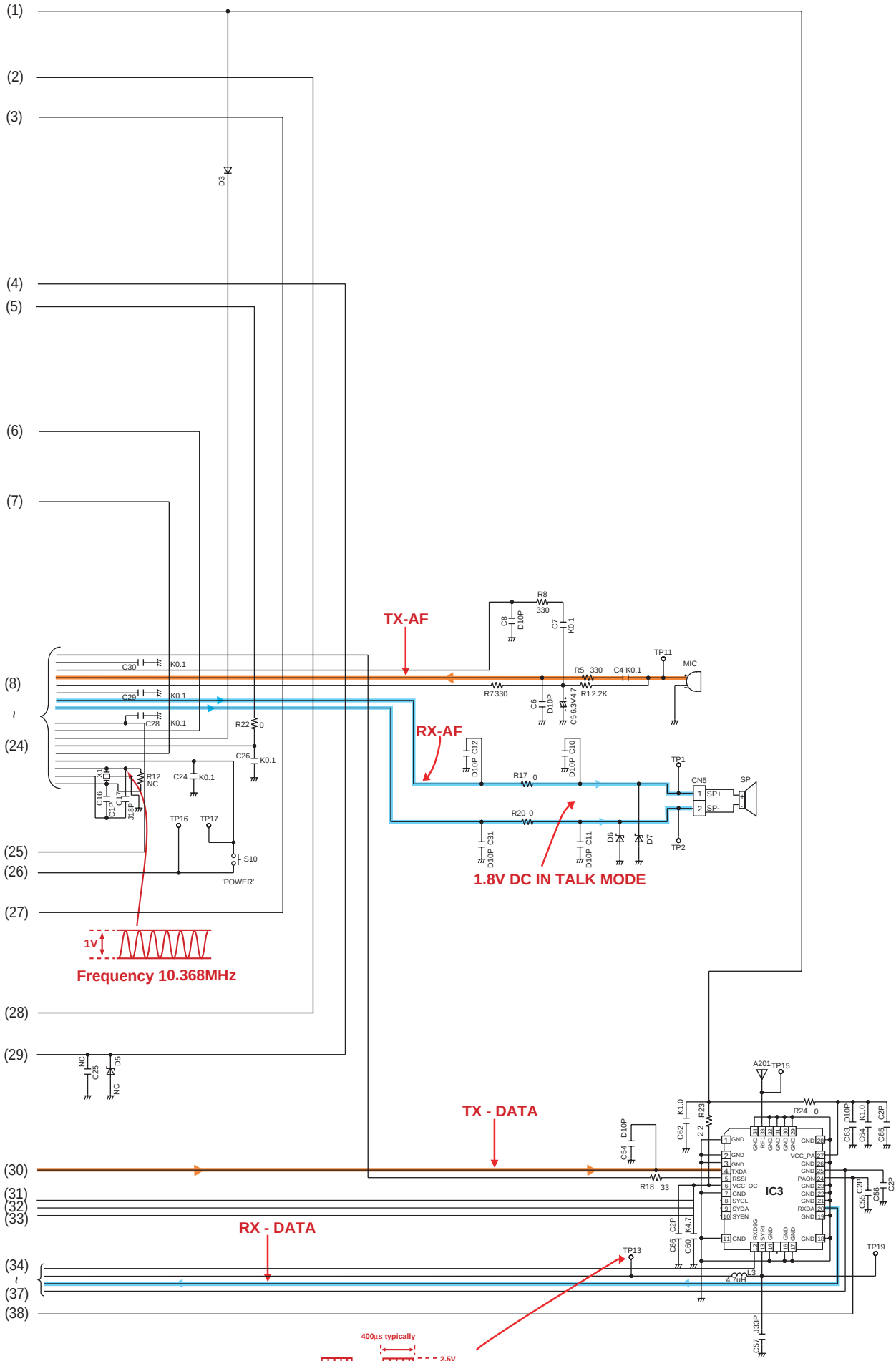
KX-TCD420GS CIRCUIT BOARD (BASE UNIT) Flow Solder Side View



KX-TCD420GS CIRCUIT BOARD (BASE UNIT) Component View



SCHEMATIC DIAGRAM (CHARGER UNIT)


(1)
(2)
(3)
(4)
(5)
(6)
(7)
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(25)
(26)
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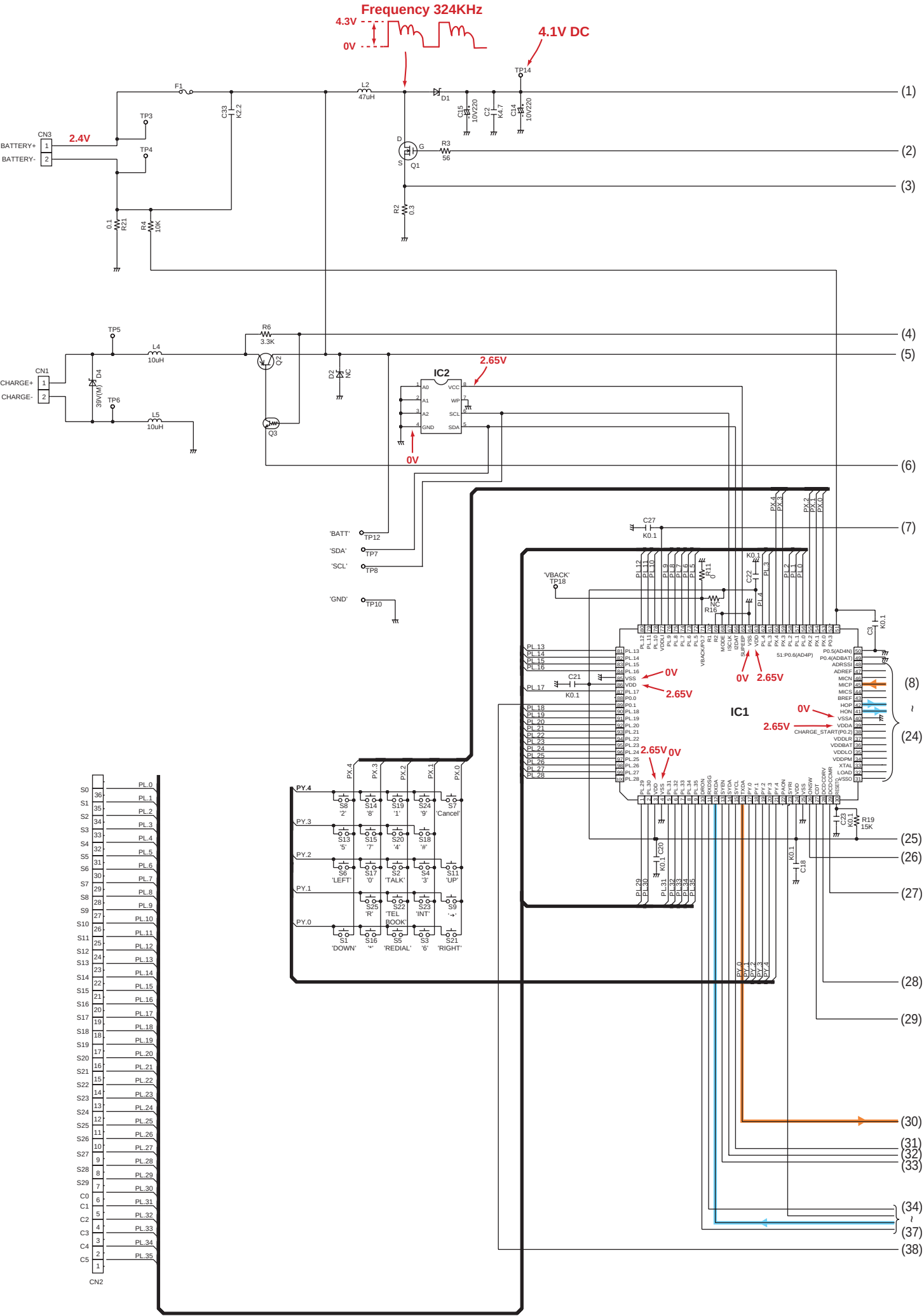
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(37)
(38)
TX-AF
RX-AF
TX - DATA
RX - DATA
1.8V DC IN TALK MODE
1v
Frequency 10.368MHz
'POWER'
MIC
SP
IC3
TP1
TP2
TP11
TP13
TP15
TP16
TP17
TP19
A201
CN5
SP+
SP-
S10
400µs typically
2.5V
0.5V
0V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4.1V DC
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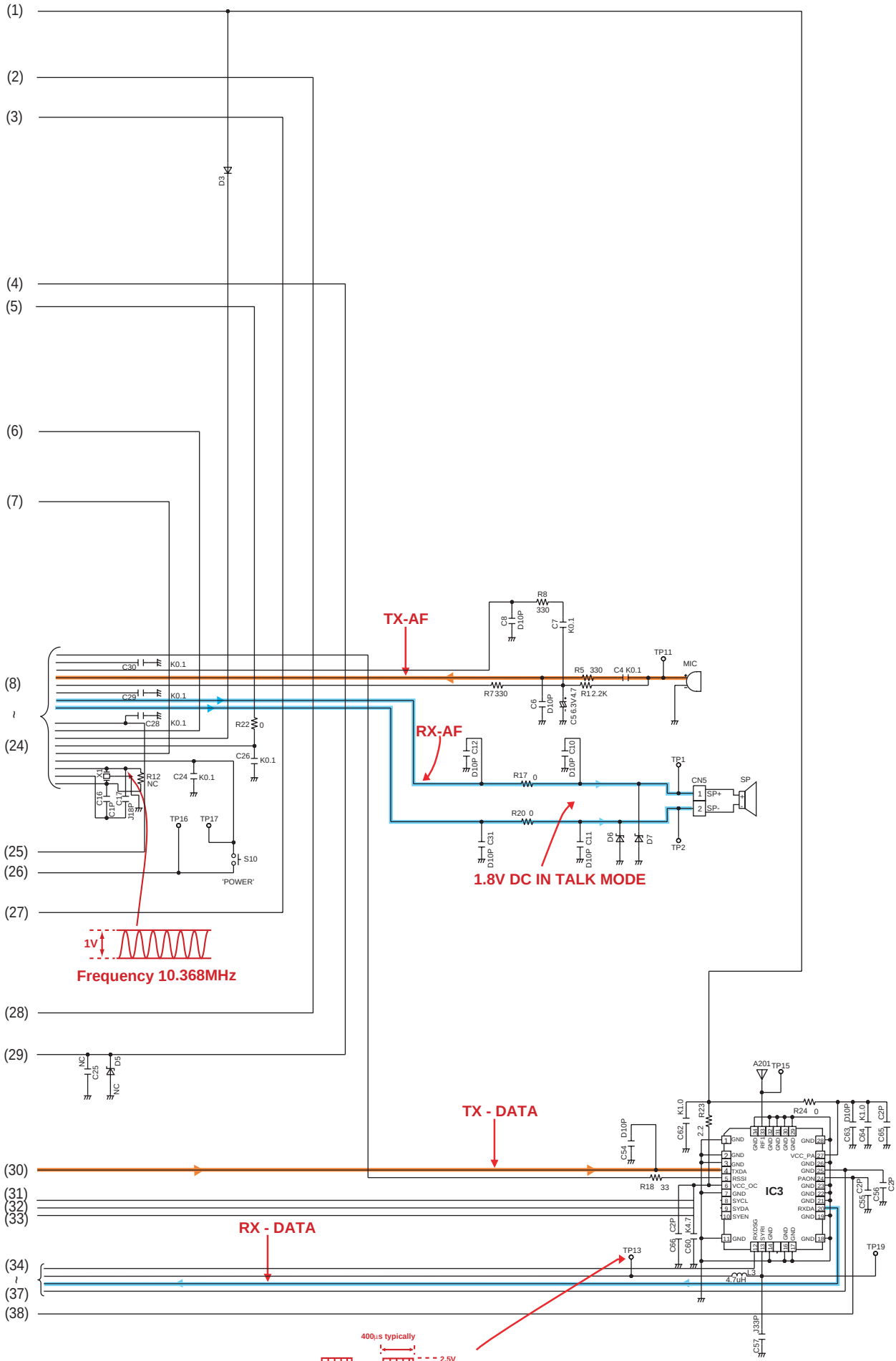
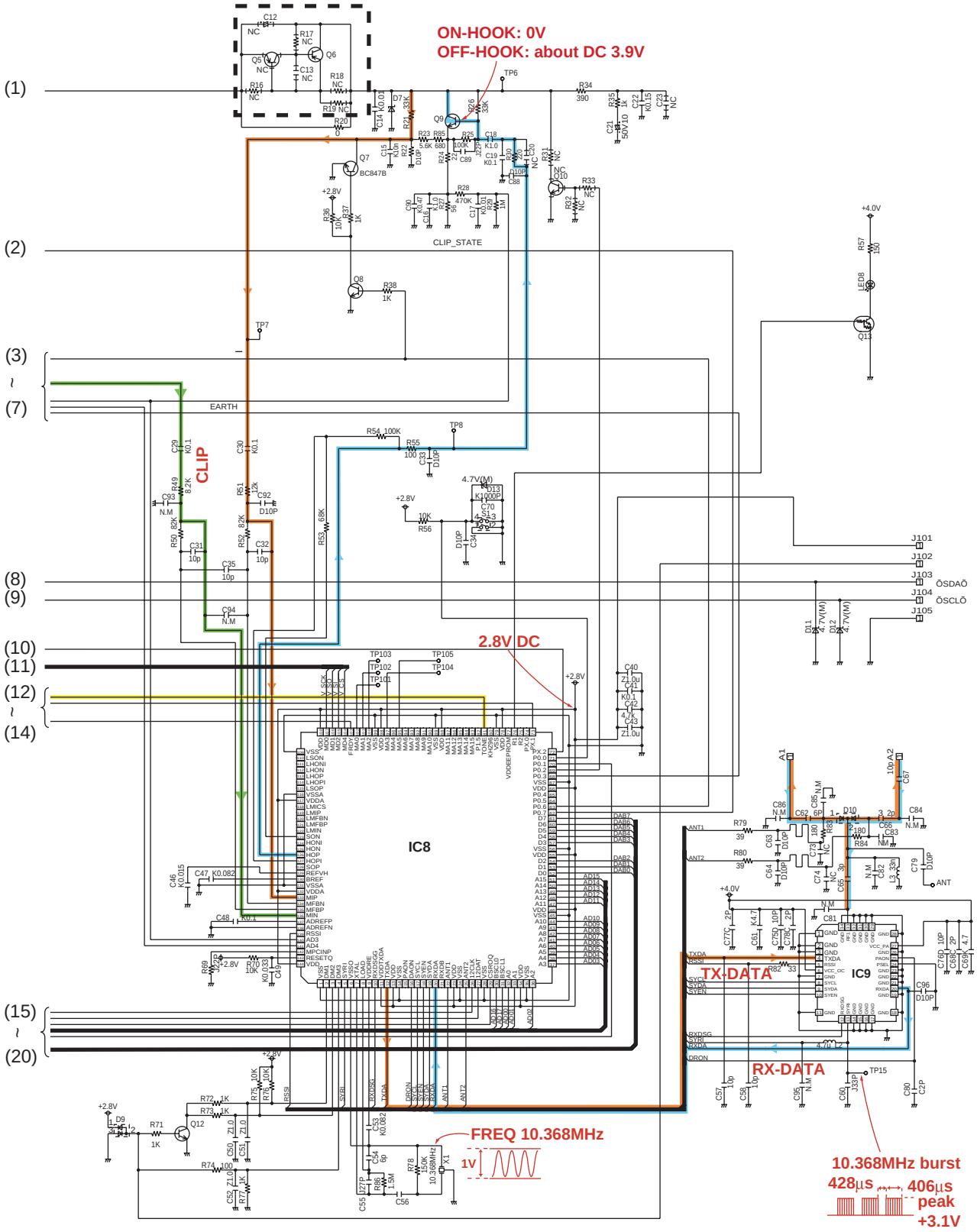
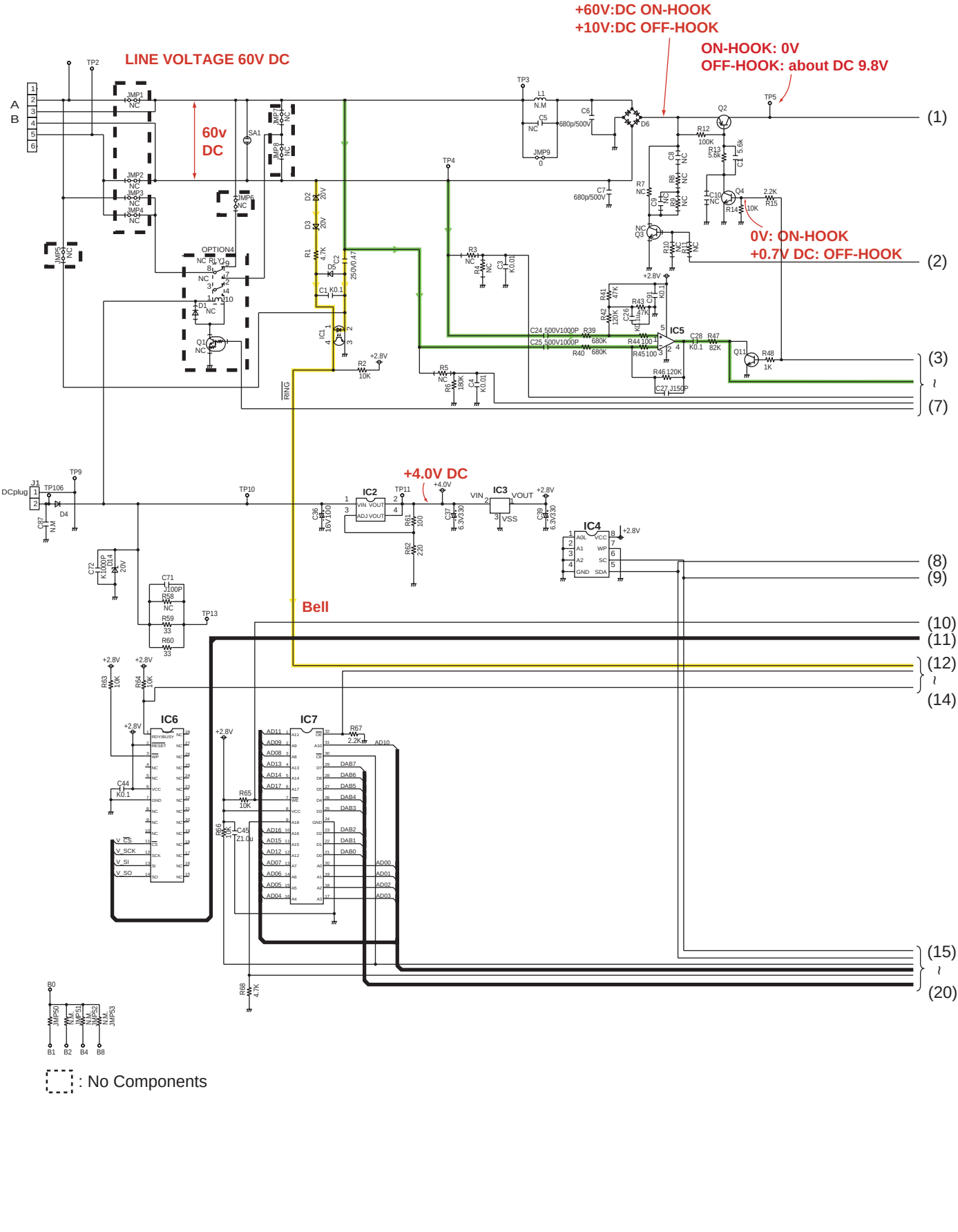
F1
L2
47uH
D1
C15
10V220
C2
K4.7
C14
10V220
CN3
2.4V
BATTERY+
BATTERY-
TP3
TP4
C33
K2.2
D
G
S
Q1
R3
56
R2
0.3
0.1
R21
R4
10K
(1)
(2)
(3)
TP5
L4
10uH
R6
3.3K
Q2
CN1
CHARGE+
CHARGE-
D4
39V(M)
TP6
L5
10uH
Q3
D2
NC
IC2
2.65V
0V
A0
A1
A2
GND
VCC
WP
SCL
SDA
(4)
(5)
(6)
'BATT'
TP12
'SDA'
TP7
'SCL'
TP8
'GND'
TP10
C27
K0.1
'VBACK'
TP18
R11
0
NC
R16
C22
PL.4
C21
K0.1
IC1
0V
2.65V
CHARGE_START(P0.2)
C23
K0.1
R19
15K
C20
K0.1
C18
K0.1
(7)
(8)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(37)
(38)
PX.4
PX.3
PX.2
PX.1
PX.0
PY.4
PY.3
PY.2
PY.1
PY.0
S8
'2'
S14
'8'
S19
'1'
S24
'9'
S7
'Cancel'
S13
'5'
S15
'7'
S20
'4'
S18
'#'
S6
'LEFT'
S17
'0'
S2
'TALK'
S4
'3'
S11
'UP'
S25
'R'
S22
'TEL BOOK'
S23
'INT'
S9
'*'
S1
'DOWN'
S16
'*'
S5
'REDIAL'
S3
'6'
S21
'RIGHT'
CN2
S0
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
S25
S26
S27
S28
S29
C0
C1
C2
C3
C4
C5

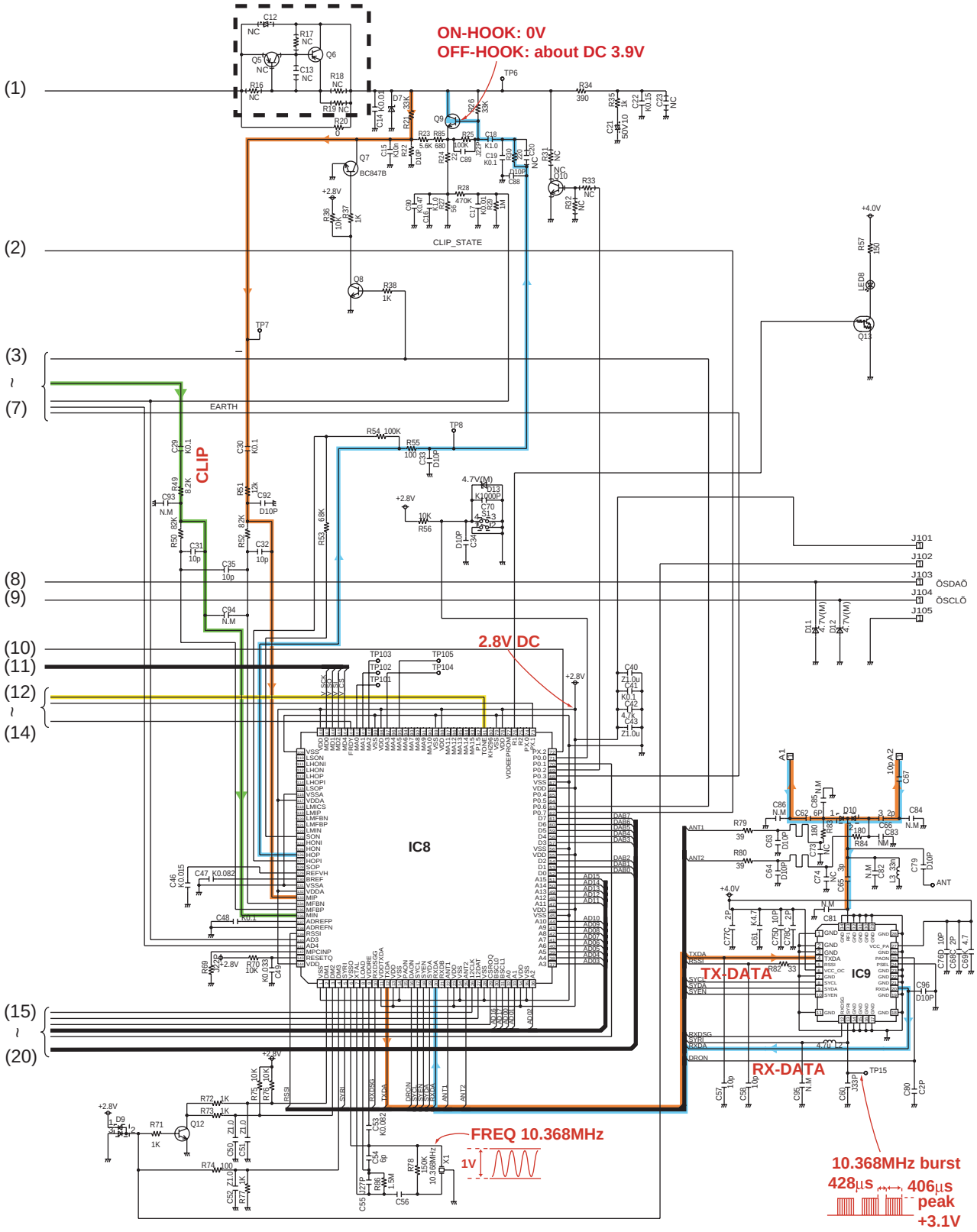

(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(24)
(25)
(26)
(27)
(28)
(29)
(30)
(31)
(32)
(33)
(34)
(37)
(38)
TX-AF
RX-AF
TX - DATA
RX - DATA
1.8V DC IN TALK MODE
1v
Frequency 10.368MHz
'POWER'
MIC
SP
IC3
TP1
TP2
TP11
TP13
TP15
TP16
TP17
TP19
A201
CN5
SP+
SP-
S10
400µs typically
2.5V
0.5V
0V



: No Components

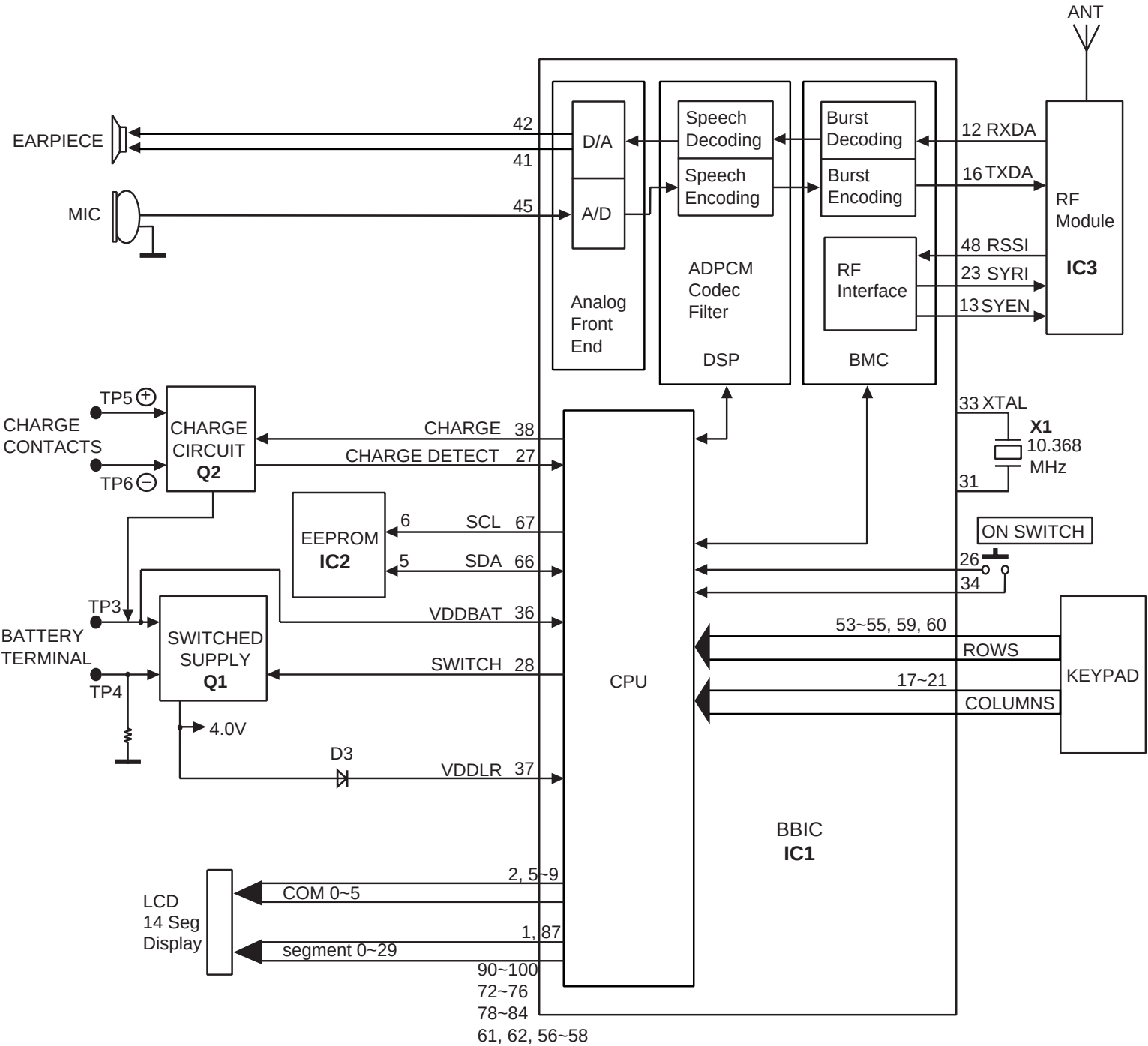
KX-TCD420GS SCHEMATIC DIAGRAM (BASE UNIT)


+60V:DC ON-HOOK
+10V:DC OFF-HOOK
ON-HOOK: 0V
OFF-HOOK: about DC 9.8V
LINE VOLTAGE 60V DC
60v DC
0V: ON-HOOK
+0.7V DC: OFF-HOOK
+4.0V DC
Bell
RING
DCplug
IC1
IC2
IC3
IC4
IC5
IC6
IC7
(1)
(2)
(3)
(7)
(8)
(9)
(10)
(11)
(12)
(14)
(15)
(20)
: No Components

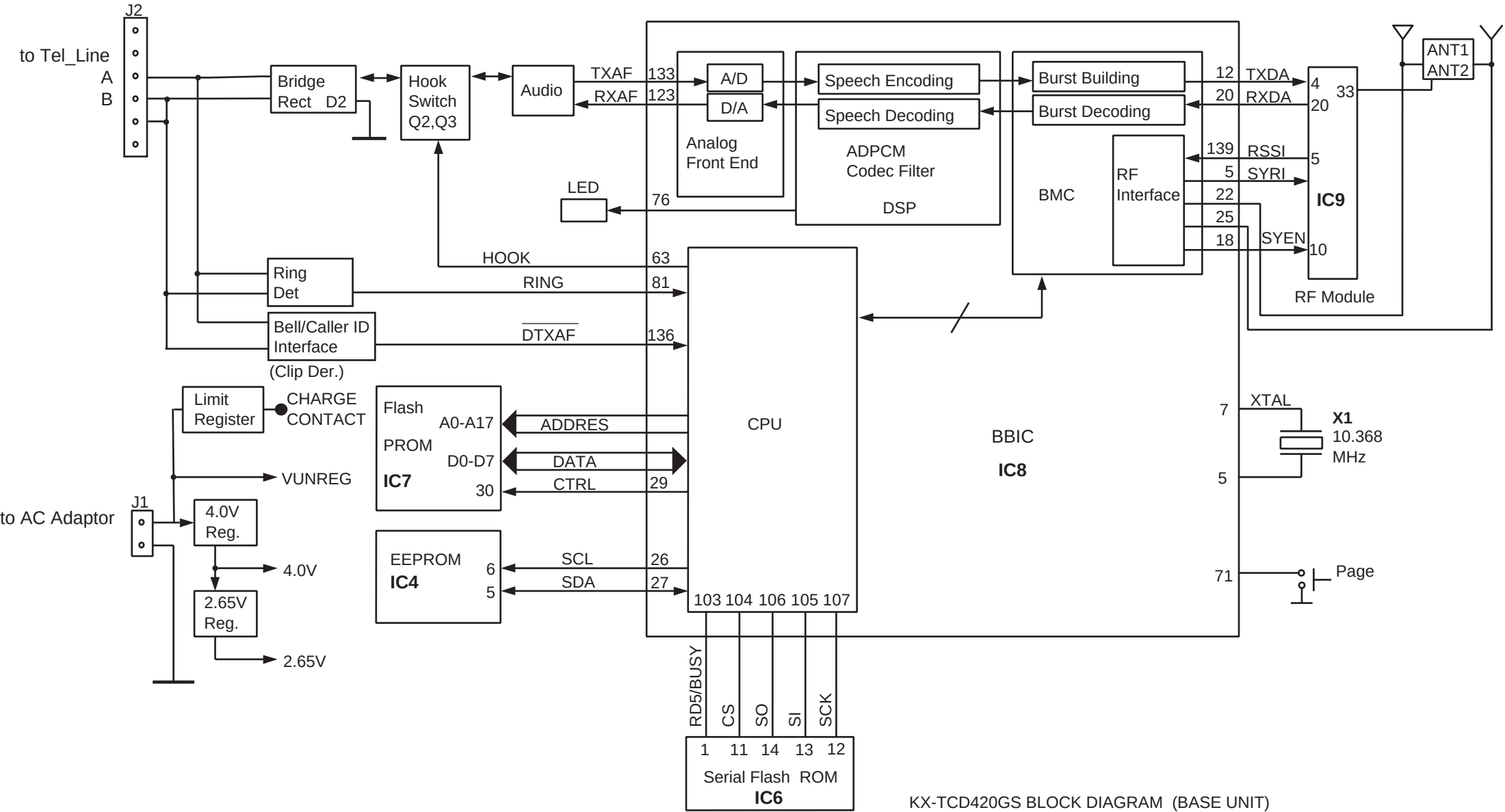


: No Components

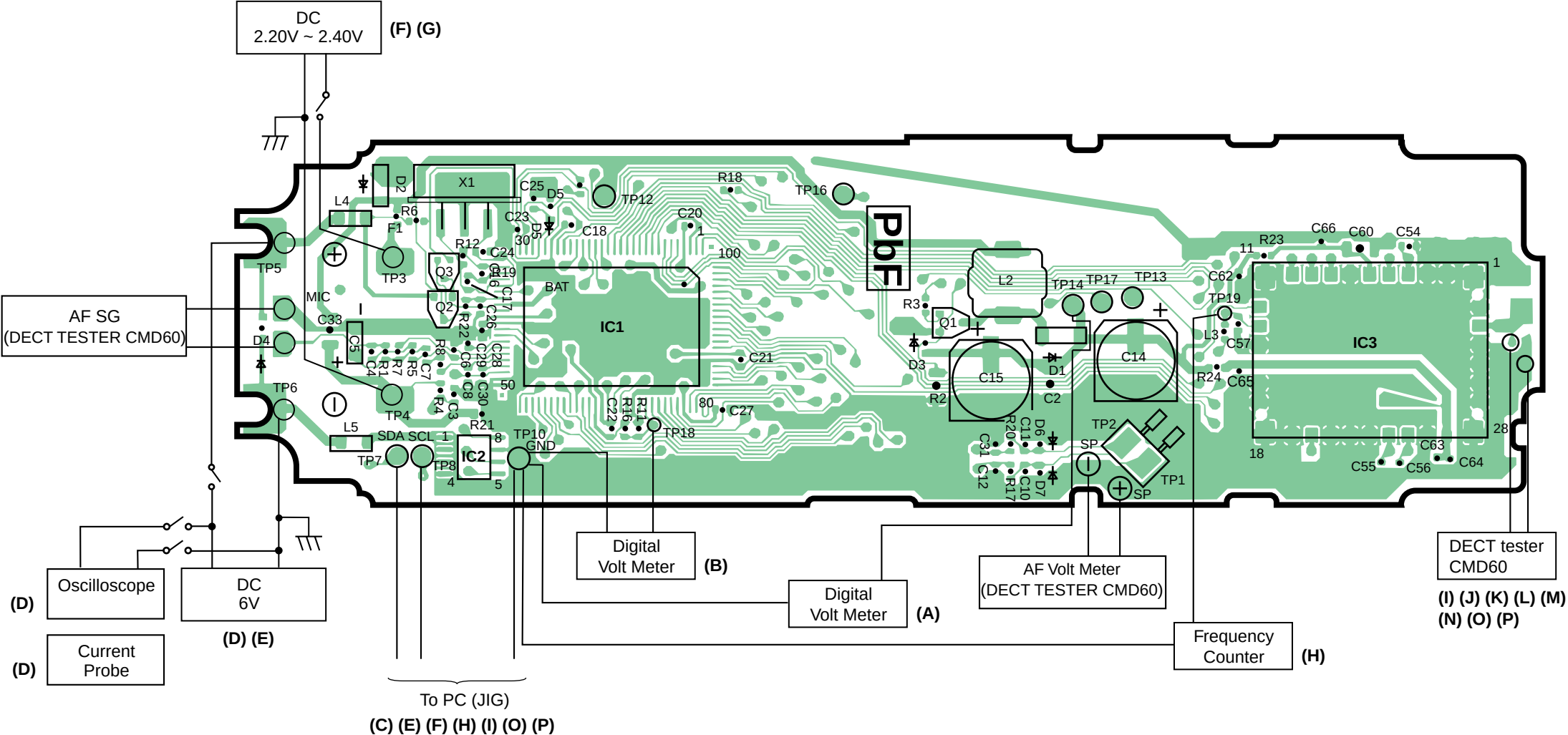
KX-TCD420GS SCHEMATIC DIAGRAM (BASE UNIT)

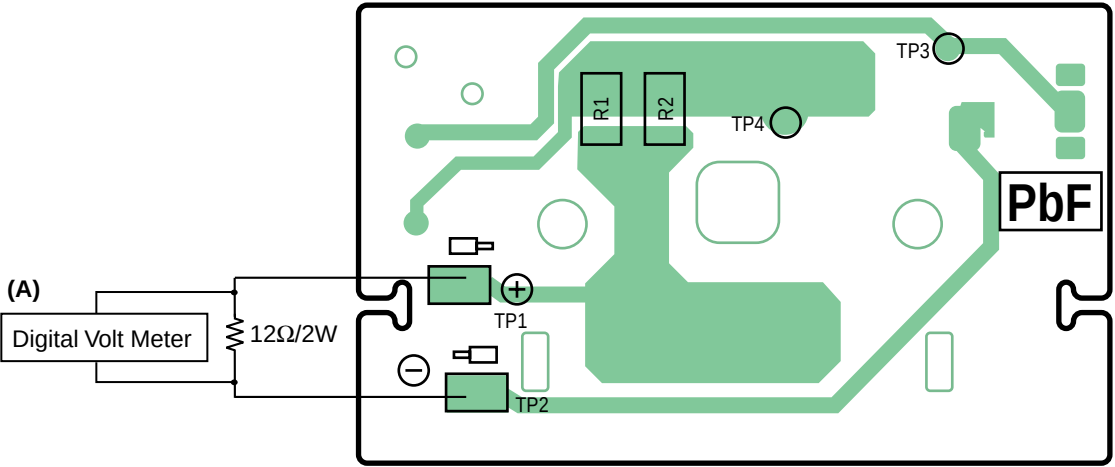


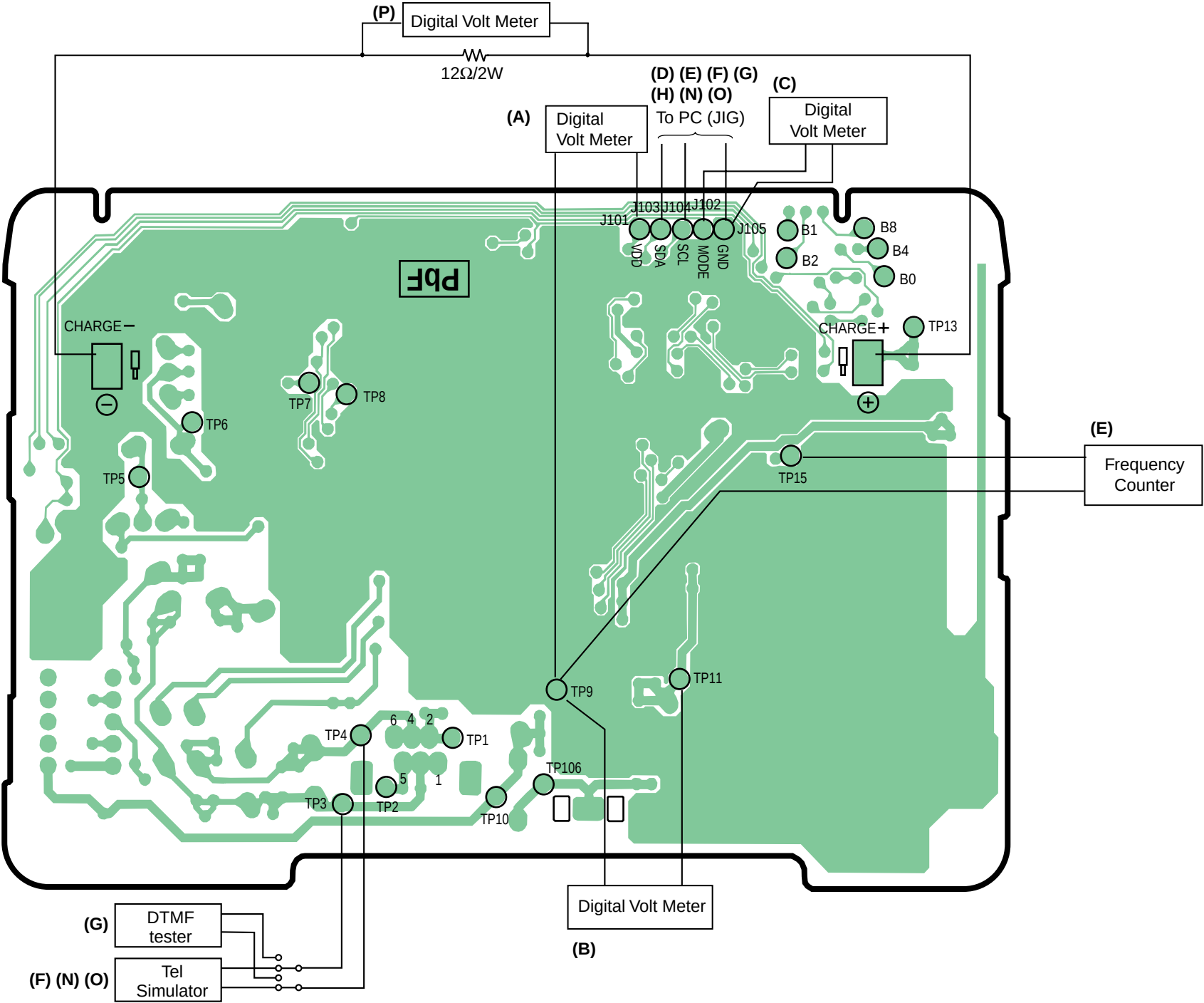
KX-A142EXS BLOCK DIAGRAM (HANDSET)

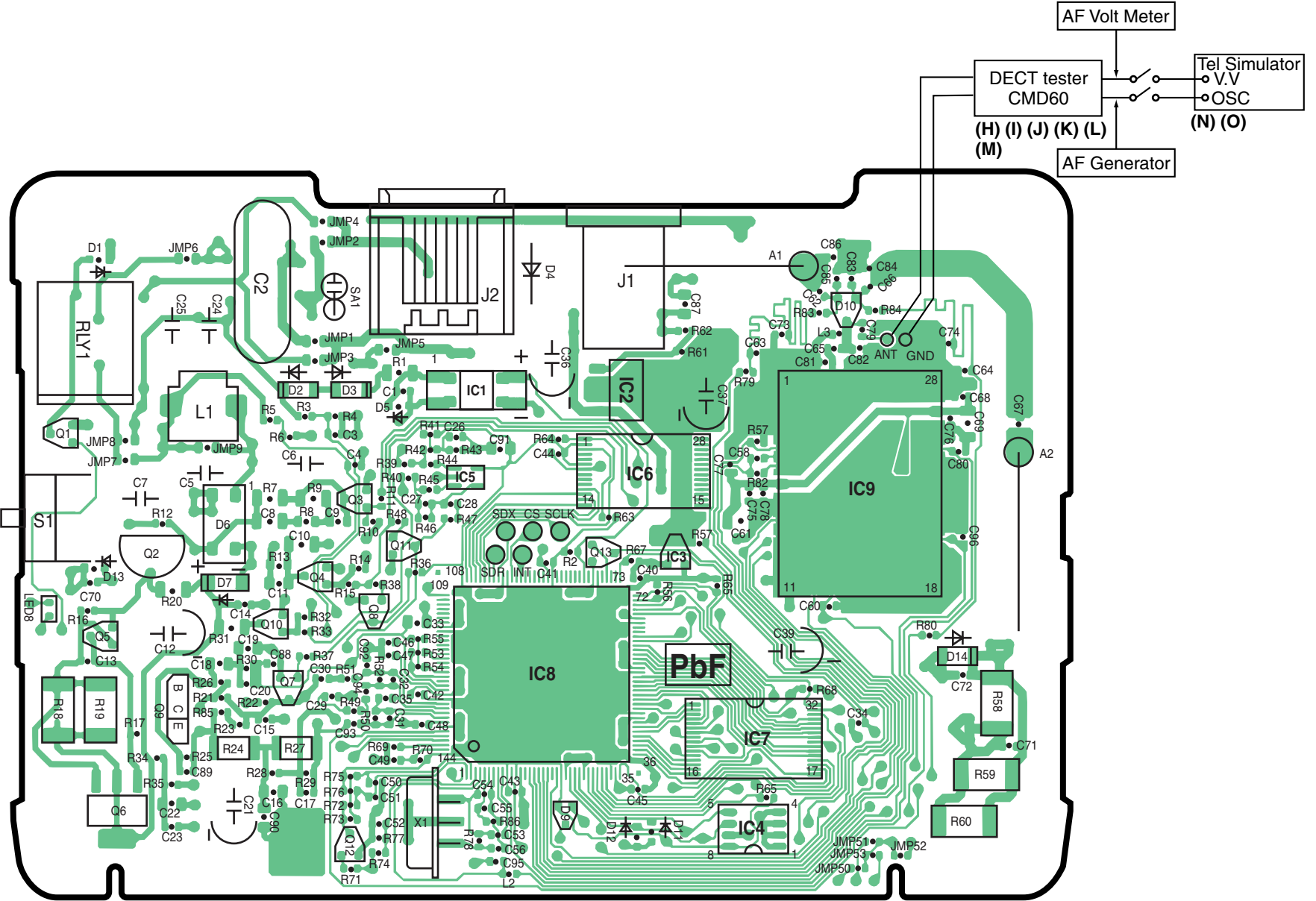


KX-TCD420GS BLOCK DIAGRAM (BASE UNIT)

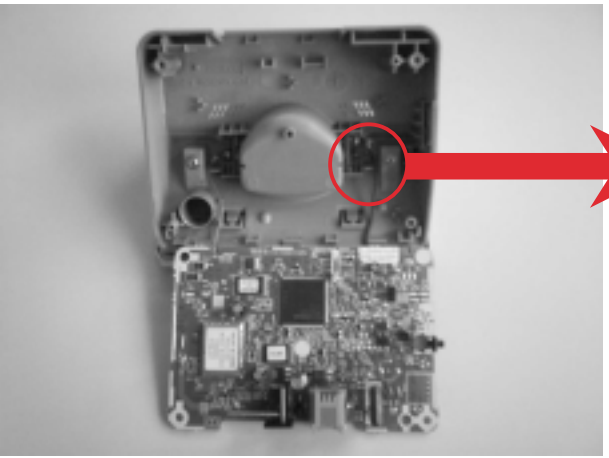

DC
2.20V ~ 2.40V
(F) (G)
AF SG
(DECT TESTER CMD60)
Oscilloscope
(D)
Current
Probe
(D)
DC
6V
(D) (E)
To PC (JIG)
(C) (E) (F) (H) (I) (O) (P)
Digital
Volt Meter
(B)
Digital
Volt Meter
(A)
AF Volt Meter
(DECT TESTER CMD60)
Frequency
Counter
(H)
DECT tester
CMD60
(I) (J) (K) (L) (M)
(N) (O) (P)
IC1
IC2
IC3
BAT
MIC
SDA SCL
GND
SP
PbF
X1
L2
L3
L4
L5
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP10
TP12
TP13
TP14
TP16
TP17
TP18
TP19
D1
D2
D3
D4
D5
D6
D7
F1
Q1
Q2
Q3
C14
C15

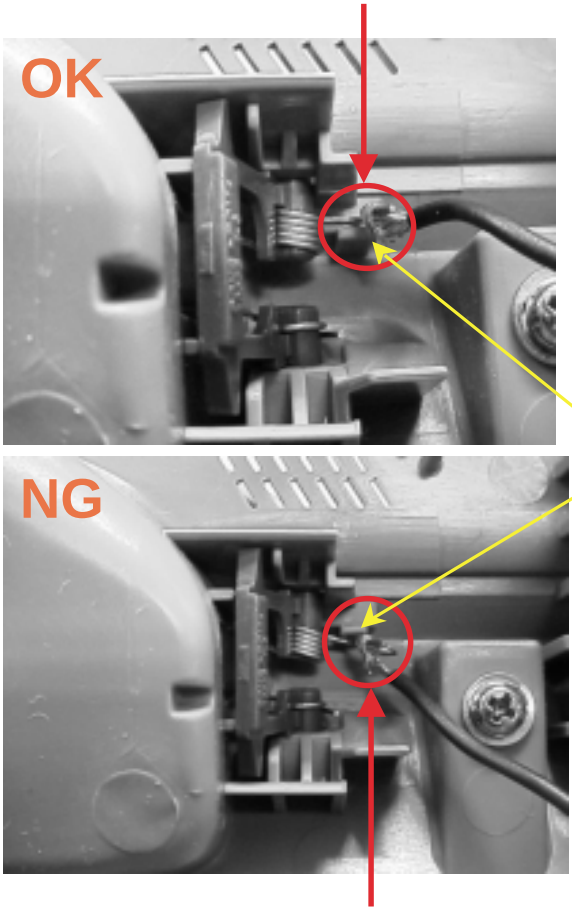

(A)
Digital Volt Meter
12Ω/2W
TP1
TP2
TP3
TP4
R1
R2
PbF


(P)
Digital Volt Meter
12Ω/2W
(A)
Digital
Volt Meter
(D) (E) (F) (G)
(H) (N) (O)
To PC (JIG)
(C)
Digital
Volt Meter
J101
J103
J104
J102
J105
VDD
SDA
SCL
MODE
GND
B1
B2
B8
B4
B0
PbF
CHARGE−
CHARGE+
TP13
TP7
TP8
TP6
TP5
(E)
Frequency
Counter
TP15
TP9
TP11
TP4
6
4
2
TP1
5
1
TP106
TP3
TP2
TP10
Digital Volt Meter
(B)
(G)
DTMF
tester
(F) (N) (O)
Tel
Simulator

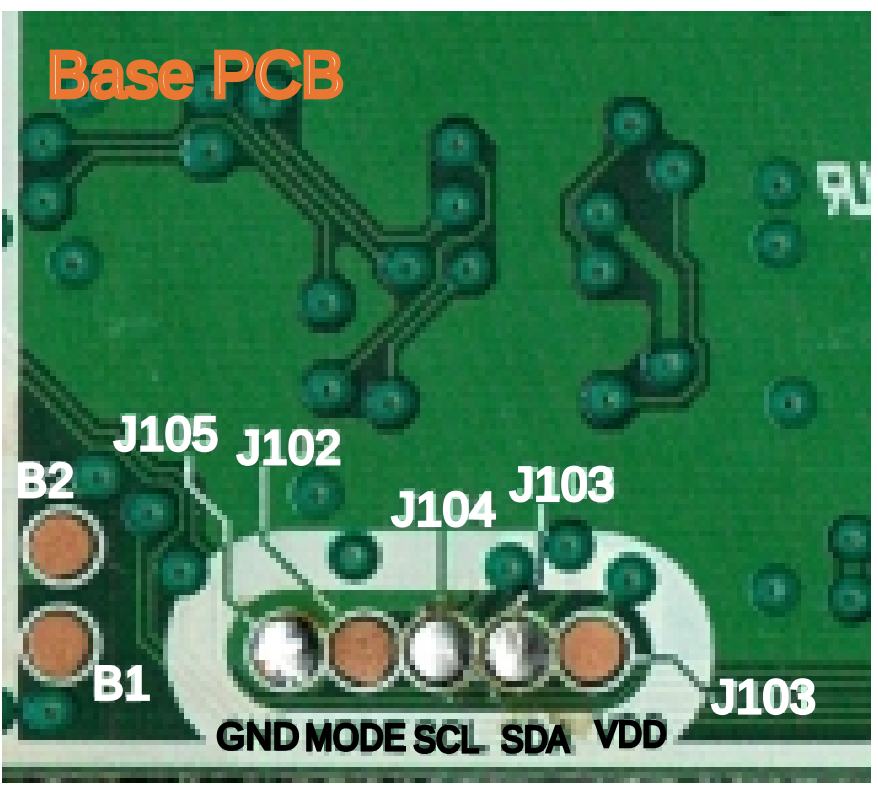

AF Volt Meter
DECT tester
CMD60
Tel Simulator
V.V
OSC
(N) (O)
(H) (I) (J) (K) (L)
(M)
AF Generator
PbF
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
J1
J2
L1
L2
L3
RLY1
S1
X1
ANT
GND
SDX
CS
SCLK
SDR
INT

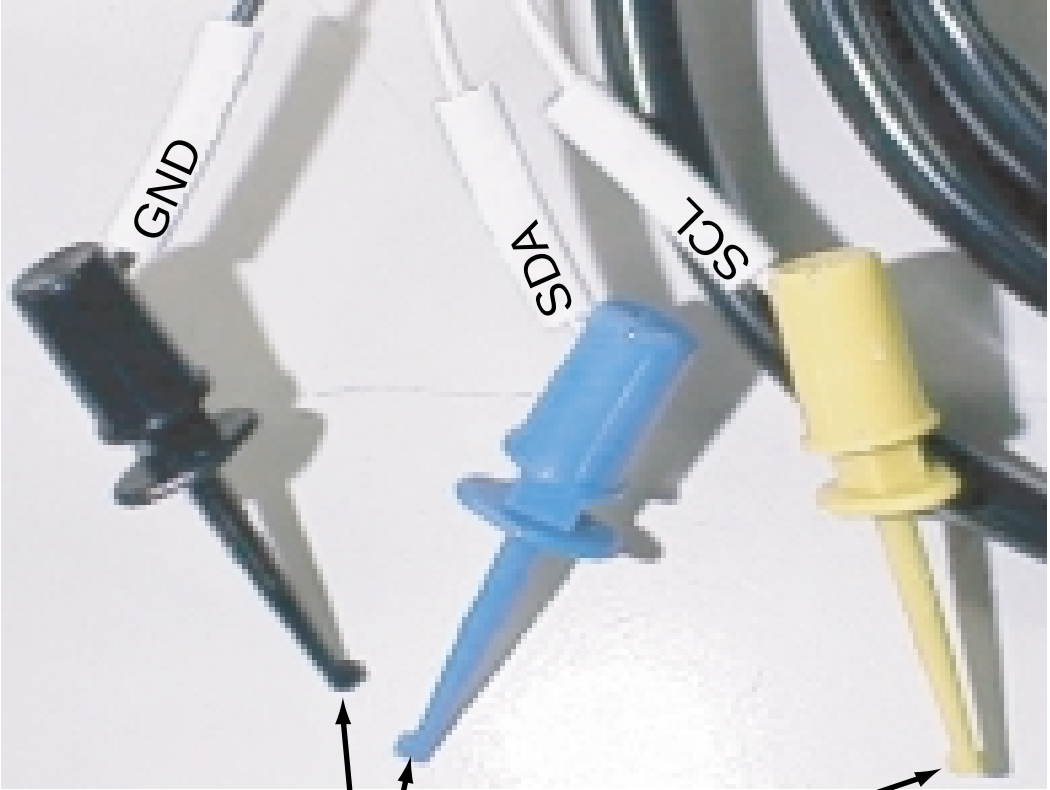
CHG terminal is properly fit in the cabinet.

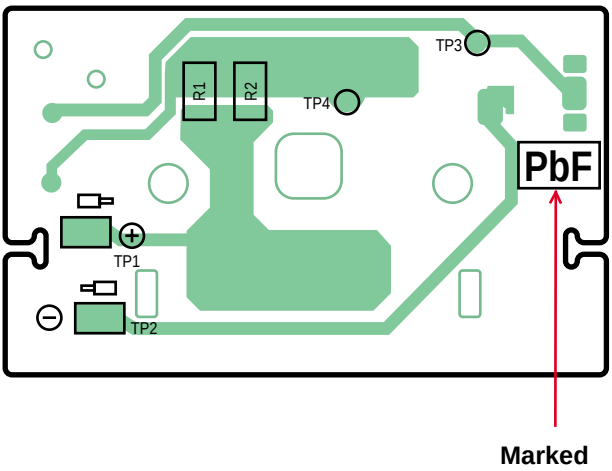




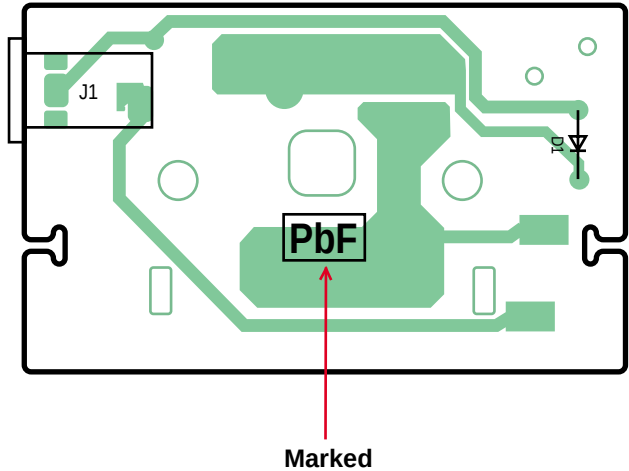
CHG terminal comes out of rib by pulling black lead wire when opening the cabinet and turning the PCB over. The terminal cannot have enough elastic force, cannot have good contact with handset, and it will result in charge problem.


Base PCB
J105
J102
B2
J104
J103
B1
J103
GND MODE SCL SDA VDD

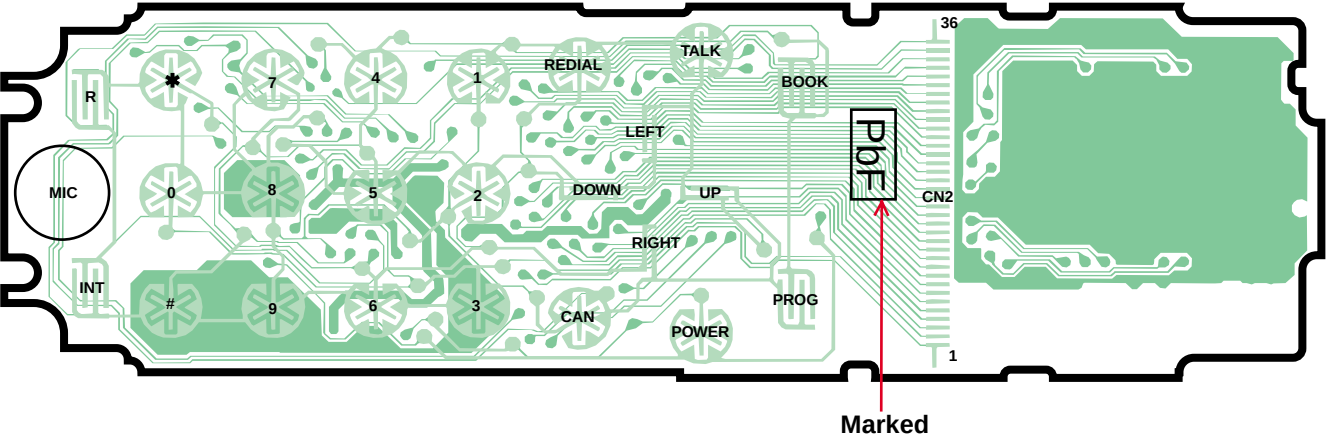

GND
SDA
SCL
Clip

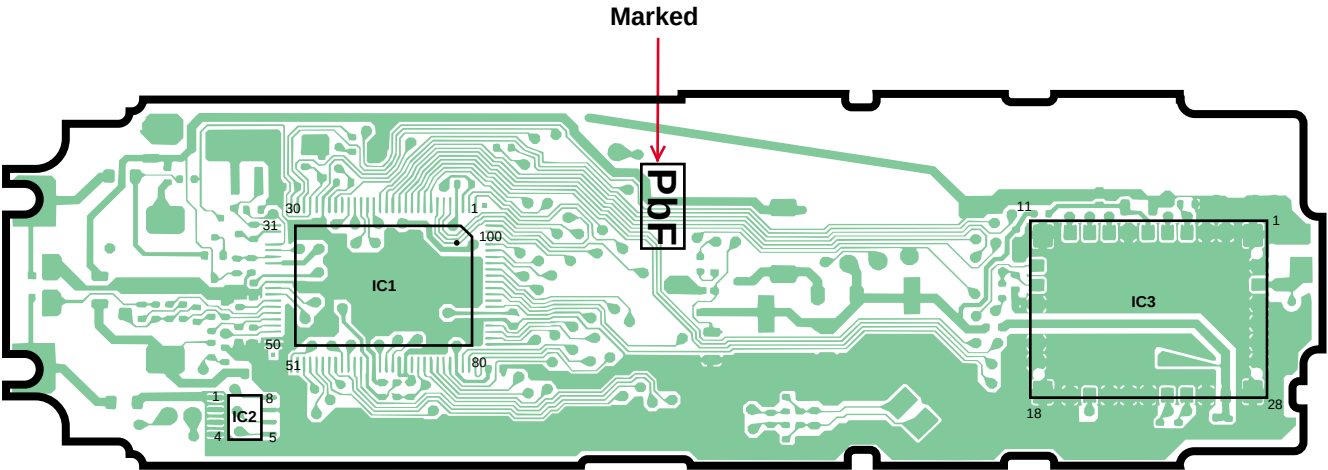


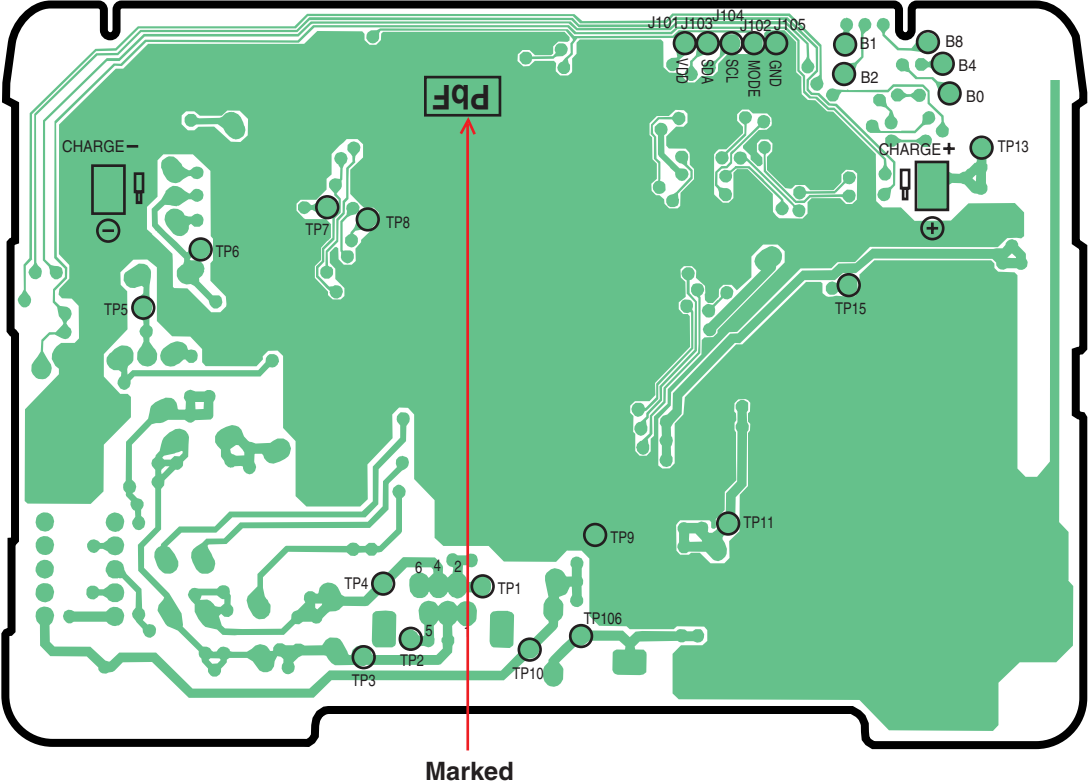
(Component View)

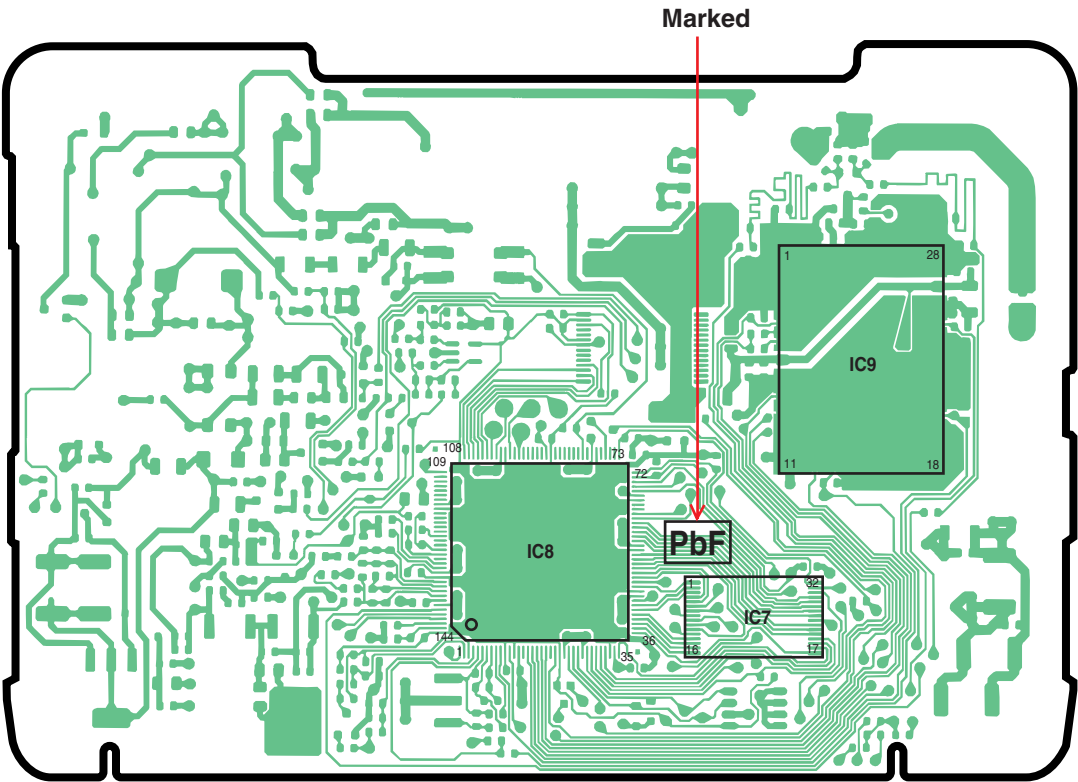


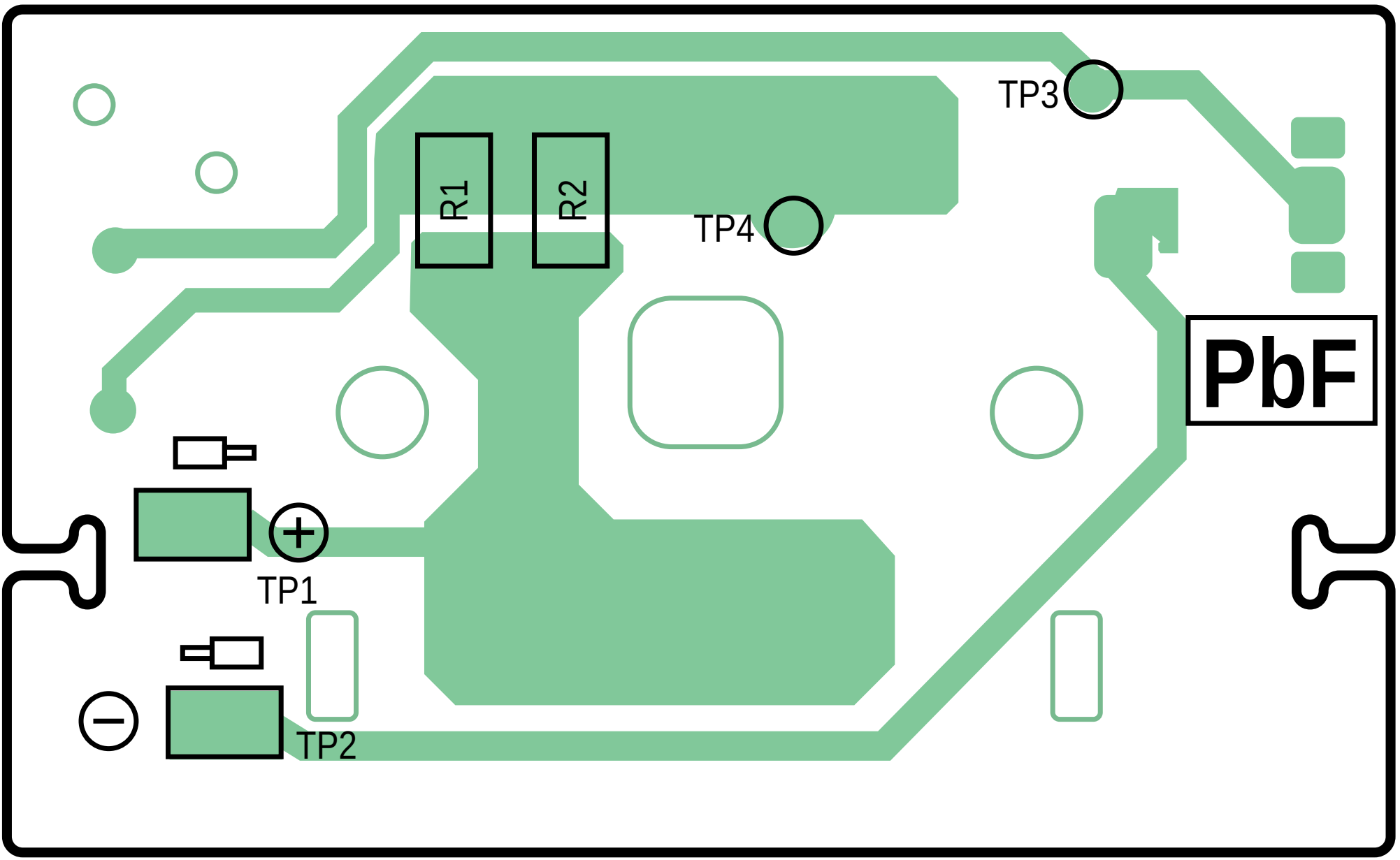
(Flow Solder Side View)


R
MIC
INT
*
7
4
1
0
8
5
2
#
9
6
3
REDIAL
TALK
BOOK
LEFT
DOWN
UP
RIGHT
CAN
POWER
PROG
P101
36
CN2
1
Marked


Marked
PbF
IC1
IC2
IC3
30
31
1
100
50
51
80
1
8
4
5
11
1
18
28


J101 J103 J104 J102 J105
VDD
SDA
SCL
MODE
GND
B1
B8
B2
B4
B0
CHARGE−
CHARGE+
TP13
TP6
TP7
TP8
TP5
TP15
TP11
TP9
TP4
6 4 2
TP1
5
TP2
TP3
TP10
TP106
PbF
Marked


Marked
IC9
1
28
11
18
IC8
108
109
73
72
144
1
36
35
PbF
IC7
1
32
16
17



CIRCUIT BOARD (CHARGER UNIT) Flow Solder Side View